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Galaxy

Science's Stake in the Race to the Moon

THE LUNAR OBSERVATORY

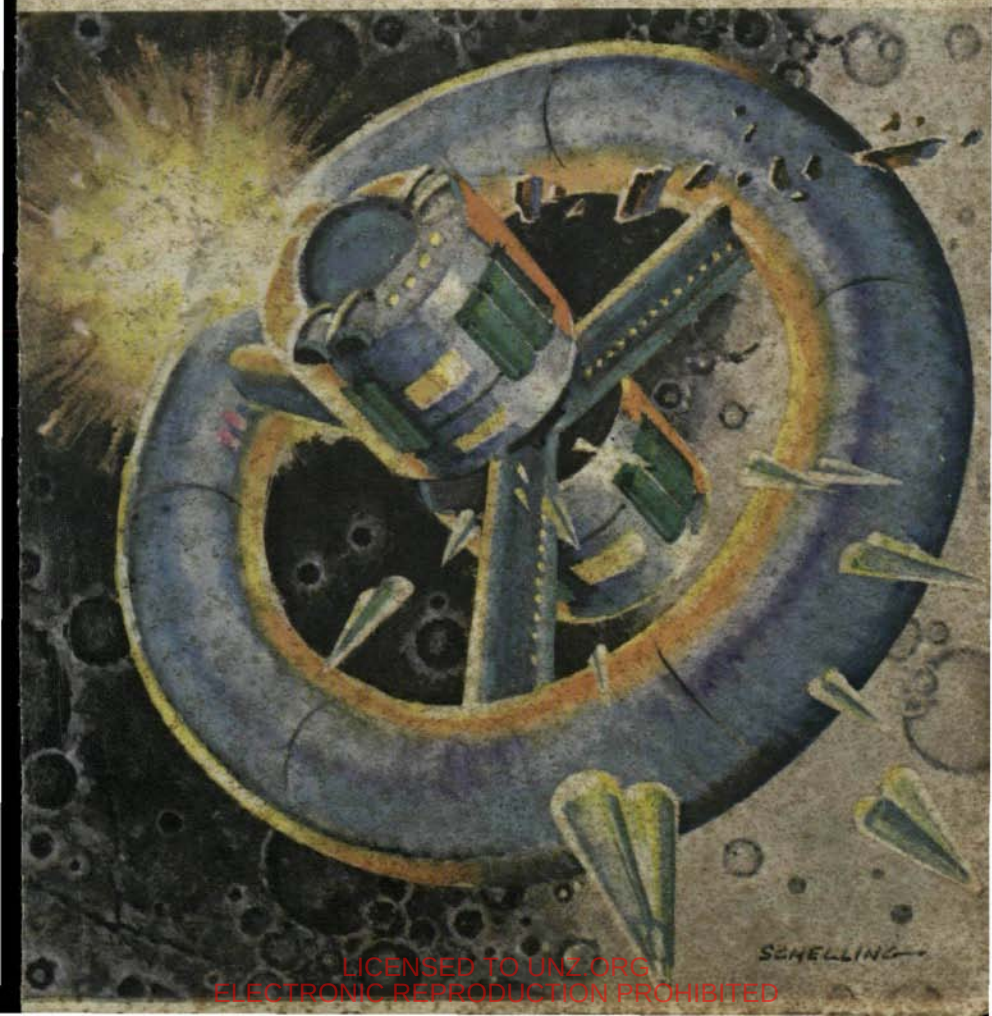
by WILLY LEY

Plus discussion by Robert S. Richardson and Donald H. Menzel.

MINDSWAP

He roamed the stars in a borrowed body – searching for his own!

by ROBERT SHECKLEY



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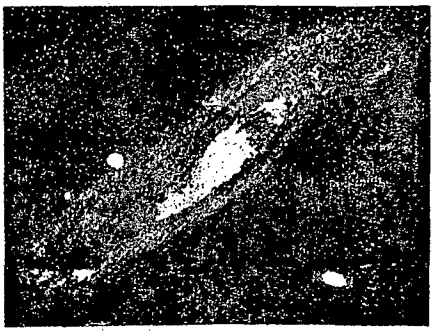

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WHICHNESS AND WHERENESS

Martin Gardner and Stephen Barr are old friends — to science-fiction readers, to each other and to *Galaxy*. As a matter of fact, they've each played a considerable part, at one time or another, in *Galaxy's* history — Steve Barr with such memorable stories as *The Back of Our Heads* and *I Am a Nucleus,* while Martin Gardner's connection with the magazine goes back to a point before it existed; he was one of the original experts called in for advice on policies and programs before the first issue of *Galaxy* came out. Now both Gardner and Barr have new books out; and although the books are not in a technical sense related, they certainly supplement each other handsomely.

Barr's book is about the whereness of things; it is called *Experiments in Topology* (Crowell). What is topology? Well, says Barr, it *begins* with "the continuity of space, or shapes; it generalizes, and then by analogy leads us into other kinds of continuity — and space as we usually understand it is left far behind. Really high-bouncing topologists not only avoid anything like pictures of these things, they mistrust them."

Barr is a high-bouncing topologist. His experiments — all of which you can do, by the way; you may not think so at first, because they bounce pretty high, too, but you can — will lead you a far piece from the Moebius strip and the four-color map

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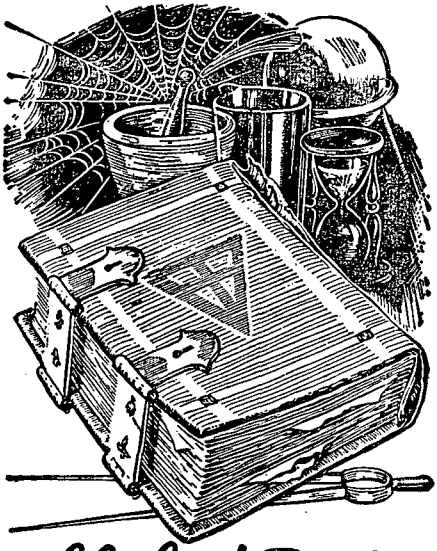

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problem. Of course, he doesn't skimp these subjects, nor yet that 3-D paradigm of the Moebius strip that is called the Klein bottle. In fact, he shows you how to build one — out of paper! And his Moebius strips take some surprising turns. Assuming that you carefully scissored one down the midline of its narrow ribbon, do you know what would happen? If you do that with a paper collar like a cigar band, obviously you get two paper collars. But if you do it with the paper-collar-given-a-half-turn called a Moebius strip —?

Well, you don't get two. Cutting it in half leaves it whole; you come out with a single Moebius strip, half as wide, twice as "long". (Assuming that a Moebius strip has "length".) And the reason? It is a matter of "handedness".

"Handedness" is what Martin Gardner's *The Ambidextrous Universe* (Basic Books) is about; its subtitle is "Left, Right and the Fall of Parity." Starting with topological considerations Gardner goes on to consider the fourth dimension and what would happen if a 3-D body (say a man) were rotated in a fourth dimension, as a two-dimensional sheet of paper can be rotated in a third. In that context, does "reversal" of left and right really mean anything? Gardner comes at the answer by quoting from George O. Smith's *Amateur in Chancery* (originally published here) as well as from such other topologically interesting science fiction as George Gamow's *The Heart on the Other Side* and H. G. Well's *The Plattner Story*. In a symmetrical universe, Gardner concludes, "handedness" means nothing but an arbitrary convention, based on nothing more substantial than common agreement.

But is the universe symmetrical?

That's where the fall of parity comes in, for at least in some types of intranuclear reactions it is not. Why? How?

That's what science is working on now. Gardner does not supply the answer. He does, however, give a priceless quotation from Niels Bohr, speaking to Wolfgang Pauli who had just proposed to him a theoretical explanation for the non-parity effects:

"We are all agreed that your theory is crazy. The question which divides us is whether it is crazy enough to have a chance of being correct. My own feeling is that it is not crazy enough." — FREDERIK POHL

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MINDSWAP

by ROBERT SHECKLEY

ILLUSTRATED BY MORROW

Only a multimillionaire could afford star-travel in the body. Only an idiot would take a chance on the other way!

I

Marvin Flynn read the following advertisement in the classified section of the Stanhope Gazette:

"*Gentleman from Mars, age 43, quite, studious, cultured, wishes to exchange bodies with similarly inclined Earth gentleman. August 1 — September 1. References Exchanged. Brokers Protected.*"

This commonplace announcement was enough to set Flynn's pulse racing. To swap bodies with a Martian!

It was an exciting idea, but also a repellent one. After all, no one would want some sand-grubbing old Martian inside his head moving his arms and legs,

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looking out of his eyes and listening with his ears. But in return for this unpleasantness, he, Marvin Flynn, would be able to see Mars. And he would be able to see it as it should be seen; through the senses of a native.

As some wish to collect paintings, others books, others women, so Marvin Flynn wanted to acquire the substance of them all through travel. But this, his ruling passion, was sadly unfulfilled. He had been born and raised in Stanhope, New York. Physically, his town was some three hundred miles from New York City. But spiritually and emotionally, the two cities were about a hundred years apart.

Stanhope was a pleasing rural community situated in the foothills of the Adirondacks, garlanded with orchards and dotted with clusters of brown cows against rolling green pastureland. Invincibly bucolic, Stanhope clung to antique ways. Amiably, but with a hint of pugnacity, the town kept its distance from the flint-hearted megalopolis to the south. The IRT-7th Avenue subway had burrowed upstate as far as Kingston, but no further. Gigantic freeways twisted their concrete tentacles over the countryside, but could not take over Stanhope's elm-lined Main Street. Other communities maintained a blast pit; Stanhope clung to its antiquated jet field. Often at night, Marvin had lain in bed and listened to that poignant sound of a vanishing rural America; the lonely wail of a jetliner.

Stanhope was satisfied with itself. The rest of the world seemed quite satisfied to leave Stanhope in its romantic dream of a less hurried age.

The only person whom the arrangement did not suit was Marvin Flynn.

He had gone on the usual tours, and had seen the usual things. Like everyone else, he had spent his weekends in Europe. And he had explored the sunken city of Miami by scuba, gazed at the Hanging Gardens of London, and worshipped in the Bah'ai temple in Haifa. For his longer vacations he had gone on a walking tour across Marie Byrd Land, explored the lower Ituri Rain Forest, crossed Sinkiang by camel and had even lived for several weeks in Lhassa, the art capital of the world.

In short, the usual tourist assortment. Flynn wanted to *really* travel.

That meant going extraterrestrial.

It didn't seem so much to ask. Yet he had never even been to the Moon.

In the final analysis, it was a

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matter of economics. Interstellar travel in the flesh was expensive, out of the question for an average sort of fellow. Unless, of course, he wished to avail himself of the advantages of Mindswap.

Marvin had tried to reconcile himself to his position in life, and to the very acceptable possibilities which that position offered him. After all, he was free, gray and 31, a tall, broad-shouldered boy with a clipped black mustache and gentle brown eyes. He had received the usual education — grade school, high school, twelve years of college, and four years of post-graduate work — and was considered well trained for his job with the Reyck-Peters Corporation. There he fluoroscoped plastic toys for microshrinkage, porosity, texture fatigue and the like. Perhaps it wasn't the most important job in the world; but then, we can't all be kings or spaceship pilots. It was certainly a responsible position, especially when one considers the importance of toys in this world, and the vital task of alleviating the frustrations of children.

Marvin knew all this; and yet, he was unsatisfied. To see Mars, to visit the burrow of the Sand King, to travel through the aural splendor of The Wound, to listen to the chromatic sands of the Great Dry Sea . . .

He had dreamed before. But this time was different.

That strange sensation in his throat argued a decision in the forming. Marvin wisely did not try to force it. Instead, he put on his beanie and went downtown to the Stanhope Pharmacy.

II

As he had expected, his best friend, Billy Hake was at the soda fountain, drinking an LSD frappe.

"How's the morn, Sorn?" Hake asked, in the slang popular at that time.

"Soft and mazy, Esterhazy," Marvin replied, giving the obligatory response.

"Du koomen ta de la klipje?" Billy asked. (Pidgin Spanish-Afrikaans dialect was the new laugh sensation that year.)

"Ja, Mijnheer," Marvin answered, a little heavily. His heart simply was not in clever repartee.

Billy caught the nuance of dissatisfaction. He raised a quizzical eyebrow, folded his copy of *James Joyce Comics*, popped a Keen-Smoke into his mouth, bit down to release the fragrant green vapor, and asked, "For-why you burrow?" The question was wryly phrased but obviously well-intended.

Marvin sat down beside Billy.

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Heavy-hearted, yet unwilling to reveal his unhappiness to his light-hearted friend, he held up both hands and proceeded to speak in Plains Indian Sign Language. (Many intellectually inclined young men were still under the influence of last year's sensational Projectoscope production of *Dakota Dialogue,* starring Bjorn Rakradish as Crazy Horse and Milovar Slavovivowitz as Red Cloud, done entirely in gesture.)

Marvin made the signs, mocking yet serious, for heart-that-breaks, horse-that-wanders, sun-that-will-not-shine, moon-that-cannot rise.

He was interrupted by Mr. Bigelow, proprietor of the Stanhope Pharmacy. Mr. Bigelow was a middle-aged man of 74, slightly balding, with a small but evident paunch. Yet he affected boys' ways. Now he said to Marvin, "Eh, Mijnheer, querenzie tomar la klopje inmensa de la cabeza vefrouvens in forma de ein skoboldash sundae?"

It was typical of Mr. Bigelow and others of his generation to overdo youthful slang. "Schnell," Marvin said, putting him down with the thoughtless cruelty of youth.

"Well, I never," said Mr. Bigelow, and moved huffily away.

Billy perceived his friend's pain. It embarrassed him. He was 34, nearly a man. He had a good job as foreman of Assembly Line 23 in Peterson's Box Factory. He clung to adolescent ways, of course, but he knew that his age presented him with certain obligations. Thus, he cross-circuited his fear of embarrassment, and spoke to his oldest friend in clear.

"Marvin. What's the matter?"

Marvin shrugged his shoulder, quirked his mouth and drummed aimlessly with his fingers. He said, "Oiga, hombre, ein Kleinnachtmusik es demasiado, nicht wahr? The Todt you ruve to touch . . ."

"Straighten it," Billy said, with dignity beyond his years.

"I'm sorry," Marvin said, in clear. "It's just — oh, Billy, I really do want to travel so badly!"

Billy nodded. He was aware of his friend's obsession. "Sure," he said. "Me too."

"But not as bad. Billy — I got the burns."

His skoboldash sundae arrived. Marvin ignored it, and poured out his heart to his lifelong friend. "Mira, Billy, it's really got me wound tighter than a plastic retriever coil. I think of Mars and Venus, and really *far-away* places like Aldeberan and Antares and — I mean, gosh, I just can't stop thinking about it all. Like the Talking Ocean of

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Procyon IV, and the tripartritate hominoids of Allua II, and it's like I'll simply die if I don't really and actually see those places."

"Sure," his friend said. "I'd like to see them, too."

"No, you don't *understand,*" Marvin said. "It's not just to see — it's like — it's worse than — I mean, I can't just *live* here in Stanhope the rest of my life. Even though I got a nice job and I'm dating some really guapa girls. But heck, I can't just marry some *girl* and raise kids and — and — there's gotta be something more!"

Then Marvin lapsed into adolescent incoherence. But something of his feelings had come through the wild torrent of his words, and his friend nodded sagely.

"Marvin," he said softly, "I read you five by five, honest to Sam I do. But gee, even interplanetary travel costs *fortunes.* And interstellar stuff is just plain impossible."

"It's all possible," Marvin said, "if you use Mindswap."

"Marvin! You can't mean that!" His friend was too shocked to avoid the exclamation.

"I can!" Marvin said. "And by the Christo malherido, I'm going to!"

That shocked them both. Marvin hardly ever used bad language.

"But you *can't,*" Billy said. "Mindswap is dirty!"

" 'Dirty he who dirty thinks, cabron.' "

"No, seriously. You don't want some sandgrubbing ole Martian inside your head? Moving your legs and arms, looking out of your eyes, *touching* you, and maybe even —"

Marvin cut him off before he said something really bad. "Mira," he said. "Recuerda que I'll be in *his* body, on Mars, so he'll be having the same embarrassments."

"Martians haven't got no sense of embarrassment," Billy said.

"That's just not true," Marvin said. Although younger, he was in many ways more mature than his friend. He had been an apt student in Comparative Interstellar Ethics. And his intense desire to travel rendered him less provincial in his attitudes, more prepared to see the other creature's point of view, than his friend. From the age of 12, when he had learned how to read, Marvin had studied the manners and modes of many different races in the Galaxy. Furthermore, he had scored in the 95th percentile in Projective Empathy.

He jumped to his feet. "By jingo!" he cried, striking the palm of his left hand with his right fist, "I'll do it!"

The strange alchemy of de-

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cision had transformed him. Without hesitation he returned home, packed a light suitcase, left a note for his parents, and caught the jet to New York.

III

In New York, Marvin went directly to the Body-Brokerage House of Otis, Blanders and Klent. He was sent to the office of Mr. Blanders, a tall, athletic man in the prime of life and already, at sixty-three, a full partner in the firm. He explained to this man his purpose in coming.

"Of course," Mr. Blanders said. "You have reference to our advertisement of Friday last. The Martian gentleman's name is Ze Kraggash, and he is very highly recommended by the rectors of East Skern University."

"What does he look like?" Marvin asked.

"See for yourself," Blanders said. He showed Marvin a photograph of a being with a barrel chest, thin legs, slightly thicker arms, and a small head with an extremely long nose. The picture showed Kraggash standing knee-deep in oozy clay, waving to someone. Printed on the bottom of the photograph were the words: "Souvenir of Mud Heaven — Mars' Year-'Round Vacationland."

"Nice looking chap," Mr. Blanders commented. Marvin nodded doubtfully.

"His home," Blanders continued, "is in Wagomstamk, on the edge of the Disappearing Desert in New South Mars. It is an extremely popular tourist area, as you probably know. Like you, Mr. Kraggash is desirous of travelling, and wishes to find a suitable host body. He has left the selection entirely up to us, stipulating only mental and physical health."

"Well," Marvin said, "I don't mean to boast, but I've always been considered healthy."

"I can see that at a glance," Mr. Blanders said. "It is only a feeling, of course, or perhaps an intuition; but I have come to trust my feelings in thirty years of dealing with the public. Purely on that basis I have already rejected three applicants for this particular Swap."

Mr. Blanders seemed so proud of this that Marvin felt impelled to say, "Have you really?"

"Most certainly. You can have no conception of how frequently I must detect and eliminate misfits in this line of work. Neurotics who seek ugly and illicit thrills; criminals who wish to escape the purlieu of local law; the mentally unstable. I cull them all."

"I hope that I don't fit any of

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those categories," Marvin said, with an embarrassed little laugh.

"I can tell at once that you do not," Mr. Blanders said. "I would judge you as an extremely normal young man; almost *excessively* normal, if that were possible. You have been bitten by the travel bug, which is very suitable for your time of life, and is a passion akin to falling in love, or fighting an idealistic war, or becoming disillusioned with the world, and other postures of the young. It is very fortunate that you had either the native wit or the good luck to come to us, the oldest and most reliable brokerage house in the Swap business, rather than to some of our less scrupulous competitors; or worst of all, to the Open Market."

Marvin knew very little about the Open Market; but he remained silent, not wishing to betray his ignorance.

"Now then," Mr. Blanders said, "we have certain formalities which we must go through before we can gratify your request."

"Formalities?" Marvin asked.

"Most certainly. First, you must have a complete examination — physical, mental and moral. Next, you and the Martian gentleman will both sign a Reciprocal Damage Clause. This states that any damage to your host body, whether by omission or commission, and including Acts of God, will (1) be recompensed at the rate established by interstellar convention, and (2) that such damage will be visited reciprocally upon your own body in accordance with the *lex talionis*."

"Huh?" Marvin said.

"Eye for eye, tooth for tooth," Mr. Blanders explained. "Suppose you, in the Martian corpus, break a leg. Interstellar law requiries that, upon re-occupying your own body, your own leg be broken in as scientific and painless a manner as possible."

"Even if it was an accident?"

"*Especially* if it were an accident. We have found that the Reciprocal Damage Clause has cut down the number of such accidents quite considerably."

"This begins to sound sorta dangerous," Marvin said.

"Any course of action contains an element of danger," Mr. Blanders said. "But the risks involved in Swapping are statistically unimportant, assuming that you stay out of the Twisted World."

"I don't know very much about the Twisted World," Marvin said.

"Nobody does," Blanders said. "That's why you're supposed to stay out of it."

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Marvin nodded thoughtfully. "What else is there?"

"Nothing to speak of. Just paperwork, waivers of special rights and immunities, that sort of thing. And, of course, I must give you the standard warning about metaphoric deformation."

"All right," Marvin said. "I'd like to hear it."

"I just gave it," Blanders said. "But I'll give it again. Watch out for metaphoric deformation."

"I'd be glad to," Marvin said. "But I don't know what it is."

"It's really quite simple," Blanders said. "You might consider it a form of situational insanity. You see, our ability to assimilate the unusual is limited, and these limits are quickly reached and surpassed when we travel to alien planets. We experience too much novelty; it becomes unbearable, and the mind seeks relief through the buffering process of analogizing. It forms a bridge between the accepted known and the unacceptable unknown, imbuing the intolerable unknown with a desirable familiarity. When, unable to handle the flood of data by the normal process of conceptual analogizing, the subject becomes victim to *perceptual* analogizing. The process is also known as Panzaism. Does that make it clear?"

"No." Marvin said. "Why is it called Panazaism?"

"The concept is self-explanatory," Blanders said. "Don Quijote thinks the windmill is a giant; whereas Panza thinks the giant is a windmill. Quijotism may be defined as the perception of everyday things as rare entities. The reverse of that is Panzaism, which is the perception of rare entities as everyday things."

"Do you mean," Marvin asked, "that I might think I was looking at a cow, when actually it was an Altairian?"

"Precisely," Blanders said. "It's simple enough, once you apply yourself. Just sign here and here and we will get on with it."

IV

Despite a bipedal frame, the Martian is one of the strangest creatures in the galaxy. Indeed, from a sensory viewpoint, the Kvees of Aldeberan, despite their double brains and special-function limbs, are closer to us. It is a disturbing thing to Swap into the corpus of a Martian.

Marvin Flynn found himself in a pleasantly furnished room. There was a single window; through it, he gazed with Martian eyes upon a Martian landscape.

He closed his eyes, since he could register nothing except a dismaying confusion. Despite in-

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oculations, he was beset by the nausea-producing waves of culture-shock, and he had to stand very still until it subsided. Then, cautiously, he opened his eyes and looked again.

He perceived low, flat sand dunes, made up of a hundred or more distinct hues of gray. A silvery-blue wind was running across the horizon, and an ochre counter-wind seemed to be attacking it. The sky was red, and many indescribable hues were visible in the infra-red scale.

In everything, Flynn saw spidery spectrum lines. Earth and sky presented him with a separate dozen palettes, some complementary, more of them clashing. There was no harmony in nature's colors on Mars.

Marvin found a pair of glasses in his hand, and slipped them on. Immediately, the roar and clash of colors was reduced to manageable proportions. The numbness of shock receded, and he began to perceive other things.

First, a heavy booming in his ear, and a quick rattle beneath it, like the tattoo of a snare drum. He looked around for the source of this noise, and saw nothing except earth and sky. He listened more carefully, and found that the sounds were coming from his own chest. They were his lungs and heart; sounds which all Martians lived with.

Now Marvin was able to take stock of himself. He looked at his legs, which were long and spindly. There was no knee-joint; instead, the leg was pivoted at the ankle, shin, mid-thigh, and upper thigh. He walked, and admired the fluid motion of his movements. His arms were slightly thicker than his legs, and his double-jointed hands had three fingers and two opposable thumbs. He could bend and twist these in a surprising number of ways.

He was dressed in black shorts and a white jumper. His chest-prop was folded neatly and covered with an embroidered leather case. He was amazed at how natural it all seemed.

And yet, it was not surprising. The ability of intelligent creatures to accommodate to new environments was what made Mindswap possible.

Flynn was musing on this when he heard a door open behind him. He turned and saw a Martian standing in front of him, dressed in a government uniform of green and gray stripes. The Martian had reversed his feet in greeting, and Marvin quickly responded in kind.

One of the glories of Mindswap is "automatic education." In the amusing jargon of the trade: "When you take over a house,

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you get the use of the furnishings." The furnishings, of course, are the use of primary available knowledge in the host brain. Knowledge such as language, customs, mores and morals, general information about the area in which one lives, and so forth. This is primary-environment information; general, impersonal, useful as a guide, but not necessarily reliable. Personal memories, likes, dislikes, are, with certain exceptions, unavailable to the occupier; or available only at the cost of considerable mental effort. Again, in this area there is what appears to be a type of immunological reaction, which allows only a superficial degree of contact between disparate entities.

"Soft wind," the Martian said, in the classic old Martian greeting-form.

"And cloudless sky," Flynn replied. (To his annoyance, he found that his Host-body had a slight lisp.)

"I am Meenglo Orichichich, of the Tourist Bureau. Welcome to Mars, Mr. Flynn."

"Thanks," Flynn said. "Awfully good to be here. It's my first Swap, you know."

"Yes, I know," Orichichich said. He spat on the floor — a sure sign of nervousness — and uncurled his thumbs. From the corridor there came a sound of heavy voices. Orichichich said, "Now then, concerning your stay on Mars —"

"I want to see the Burrow of the Sand King," Flynn said. "And, of course, the Talking Ocean."

"Both excellent choices," the official said. "But first there are one or two minor formalities."

"Formalities?"

"Nothing too difficult," Orichichich said, his nose twisting to the left in the Martian smile. "Would you look over these papers and identify them, please?"

Flynn took the proffered papers and scanned them. They were replicas of the forms he had signed on Earth. He read them through, and found that all the information had been sent correctly.

"These are the papers I signed on Earth," he said.

The noise from the corridor grew louder. Marvin could make out words: "Scalded egg-laying son of a frostbitten tree stump! Gravel-loving degenerate!"

Those were very strong insults indeed.

Marvin raised his nose quizzically. The official hastily said, "A misunderstanding, a mixup. One of those unfortunate occurrences which occur even to the best-run of government tourist services. But I am quite sure that we can straighten it out in

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five gulps of a rapi, if not sooner. Permit me to ask you if —"

There was the sound of a scuffle in the corridor. Then a Martian burst into the room, with a Martian sub-official clinging to his arm and trying to stop him.

The Martian who had burst in was extremely old, as could be told by the faint phosphorescence of his skin. His arms quivered as he pointed both of them at Marvin Flynn.

"There!" he shouted. "There it is, and by treestumps I want it now!"

Marvin said, "Sir, I am not in the habit of being addressed as 'it'."

"I am not addressing you," the old Martian said. "I do not know nor care who or what you are. I am addressing the body which you are occupying, and which is not yours."

"What are you talking about?"

"This gentleman," the official said, "claims that you are occupying a body which belongs to him." He spat twice on the floor. "It is a mixup, of course, and we can straighten it out at once —"

"Mixup!" howled the old Martian. "It's an out-and-out fraud!"

"Sir," Marvin said, with cold dignity, "you are under a grave misapprehension. This body was legally and fairly rented by me."

"Scaly-skinned toad!" the old man shouted. "Let me at him!" He struggled with circumspection against the restraining grip of the guard.

Suddenly, an imposing figure dressed entirely in white appeared in the doorway. All within the room fell silent as their gaze fell upon the feared and respected representative of the South Martian Desert Police.

"Gentlemen," the policeman said, "there is no need for recriminations. We shall proceed now to the police station, all of us. There, with the help of the Fulszime Telepath, we shall penetrate to the truth, and to the motivation behind it." The policeman paused impressively, stared full into each man's face, swallowed saliva to show supreme calm, and said: "This, I promise you."

Without further ado the policeman, the official, the old man, and Marvin Flynn, proceeded to the police station. They walked silently, and they shared a common mood of apprehension.

It is a truism throughout the civilized galaxy that when you go to the police your troubles really begin.

V

At the police station, Marvin Flynn and the others were taken directly to the dim, moist

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chamber were the Fulszime telepath lived. This tripedal entity, like all of his fellows from the Fulszime Planet, possessed a telepathic sixth sense, perhaps in compensation for the dimness of his other five.

"All right," the Fulszime telepath said, when all were assembled before him. "Step forward, fellow, and tell me your story." He pointed a finger sternly at the policeman.

"Sir!" the policeman said, straightening with embarrassment, "I happen to be the policeman."

"That is interesting," the telepath said. "But I fail to see what it has to do with the question of your innocence or guilt."

"But I am not even accused of a crime," the policeman said.

The telepath mused for a moment, then said, "I think I understand. It is these two who are accused. Is that it?"

"It is," the policeman said.

"My apologies. Your aura of guilt led me to an over-hasty identification."

"Guilt?" the policeman said. "Me?" He spoke calmly, but his skin was showing the typical orange striations of anxiety.

"Yes, you," the telepath said. "You need not be surprised. Grand larceny is the sort of thing about which most intelligent creatures feel guilty."

"Now just a minute!" the policeman shouted. "I haven't committed any grand larceny!"

The telepath closed his eyes and introspected. At last he said, "That is correct. I meant to say that you *will* perform grand larceny."

"Clairvoyance is not admissible as evidence in a court of law," the policeman stated. "And furthermore, readings of the future are a direct violation of the law of free will."

"This is true," the telepath said. "My apologies."

"It's quite all right," the policeman said. "When will I perform this alleged grand larceny?"

"About six months hence," the telepath said.

"And will I be arrested?"

"No. You will flee the planet, going to a place where there is no extradition law."

"Hmm, interesting," the policeman said. "Could you tell me if . . . But we can discuss this later. Now you must hear the stories of these men, and judge their innocence or guilt."

The telepath looked at Marvin, shook a flipper at him, and said, "You may proceed." Marvin told his story, beginning with his first reading of the advertisement, and leaving out nothing.

"Thank you," the telepath said, when he was through. "And now, sir, your story." He turned

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to the old Martian, who cleared his throat, scratched his thorax, spit once or twice, and then proceeded.

AIGELER THRUS'S STORY

I don't even know where to begin this thing, so I guess I'd better start with my name, which is Aigeler Thrus, and my race, which is Nemucthian Adventist, and my occupation, which is that I own and operate a clothing store on the planet Achelses V. Well, it's a small business and not a very good business and my store is located in Lambersa on the South Polar Cap, and I sell clothing all day to immigrant Venusian laborers, who are big, green, hairy fellows, very ignorant and very excitable and apt to fight, though I have no prejudices against them.

You get to be philosophical in my business, and maybe I'm not rich, but at least I got my health (thank God), and my wife Allura is healthy too except for a mild case of tentacular fibrosis. And I got two grown sons, one of whom is a doctor in Sidneport, and the other is a trainer of Klannts. And I also got one daughter who is married, so of course that means I got a son-in-law.

This son-in-law of mine I have always distrusted, since he is a fancy dresser and owns twenty pairs of chest-props, although his wife my daughter hasn't even got a matched set of scratchers. But it can't be helped, she dug her burrow, now she has to crawl in it. But still, when a man is so interested in clothes and fancy-smelling joint lubricants and similar luxuries on the salary of a moisture salesman (he calls himself a hydrosensory engineer) it makes you wonder a little.

And he's always trying to scratch up extra income on the side with various foolish ventures which I have to equip him for out of my hard-earned savings which I get by selling to these big green fellows. Like last year he got hold of this novelty item, a backyard cloudmaker, and I told him, who would want it? But my wife insisted that I help him out, and sure enough he went broke. And then this year, he had another scheme, and this time it was iridescent synthetic wool seconds from Vega II, a consignment of which he somehow found in Heligoport and which he wanted me to buy.

I said to him, "Look, what do my customers these Venusian loud-mouths know about fancy dressing? They're lucky if they can afford a pair of twill shorts and maybe a robe for holidays." But my son-in-law has got an answer for everything and he

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says to me, "Look, Papa, have I or have I not made a study of Venusian folkways and mores? The way I look at it, here are these people straight out of the backwoods, and they've got this love of ritual and dance and *bright colors*. So it's a natural, true or not?"

Well, to make a short story even shorter, I get talked into this venture against my better judgment. Naturally, I had to see those iridescent seconds myself, because I wouldn't trust my son-in-law to judge a piece of lint. And that meant travelling halfway across the galaxy to Heligoport in Mars. So I started making the arrangements.

No one wanted to Swap with me. I can't say I blame them, because nobody comes on purpose to a planet like Achelses V, unless it's immigrant Venusians who don't know any better. But I find this ad from this Martian, Ze Kraggash, who wants to rent his body out on account of he's taking his mind into Cold Storage for a protracted rest. It's damned expensive, but what can I do? I get a little money back by renting my own body to a friend who had been a quarentz hunter before he was bed-ridden by muscular dyscomyotosis. And I go down to the Swap Bureau and get projected to Mars.

Well, imagine my sensations when it turns out there is no body waiting for me! Everybody's running around trying to find out what happened to my host body, and they even try to send me back to Achelses V; but they can't because my friend has already left on a quarentz hunting expedition with my body.

Finally they get me a body from the Theresienstadt Rent-a-Body people. Twelve hours is the maximum they can allow me since they're all booked up for short-term rentals through the summer. And it's a pretty decrepit old body, as you can see for yourself, and damned expensive anyhow.

So I go out and try to find out what had gone wrong, and what do I find but this tourist from Earth walking around bold as brass in the body which I have paid for, and which, according to my contract, I should be occupying at this very moment.

It is not only unfair, it is also extremely aggravating to my health. And that is the entire story.

The telepath retired to his chambers in order to ponder his decision. He returned in less than an hour, and spoke as follows:

"Both of you did, in all good faith, rent, swap, or otherwise acquire, the same body, vis., the

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corpus of Ze Kraggash. This body was offered by its owner, the aforesaid Ze Kraggash, to each of you, and thus sale was consummated in direct violation of all laws concerned. Ze Kraggash's action must be considered criminal, both in execution and intent. This being the case, I have caused to be sent to Earth a message, requesting the immediate arrest of the aforesaid Ze Kraggash, and his detention in a place of custody until such time as his extradition can be affected.

"Both of you made your purchase in good faith. However, the prior, or earliest, sale, as shown in the contractual forms, was made by Mr. Aigeler Thrus, who takes precedence over Mr. Marvin Flynn by a matter of thirty-eight hours. Therefore Mr. Thrus, as the First Buyer, is awarded custody of the Corpus; and Mr. Flynn is ordered to Cease and Desist his unlawful occupancy, and to take cognizance of the Dispossess Notice which I hereby give him, and which must be obeyed within six standard Greenwich hours."

The telepath handed Marvin a Dispossess Notice. Flynn accepted it sadly, yet with resignation. "I suppose," he said, "that I had better go back to my own body on Earth."

"That," the telepath said, "would be your wisest choice. Unfortunately, it is not possible at the moment."

"Not possible? Why not?"

"Because," the telepath said, "according to the Earth authorities, whose telepathic reply I have just received, your body, animated by the mind of Ze Kraggash, is nowhere to be found. A preliminary investigation leads us to fear that Ze Kraggash has fled the planet, taking with him your body and Mr. Aigeler's money."

It took a while for it to sink in. But finally Marvin Flynn realized the implications of what had been said.

He was stranded on Mars in an alien body, which he had to relinquish. In six hours, he would be a mind with no body at all, and with a poor chance of finding one.

Minds cannot exist without bodies. Marvin Flynn slowly and unwillingly faced the imminence of his own death.

VI

Marvin did not give way to despair. He gave way instead to anger, which was a much healthier emotion, though equally unproductive. Instead of making a fool of himself by weeping in the court, he made a fool of himself by storming through the corridors of the Federal Build-

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ing, demanding either fair play or a damned good substitute.

There was no restraining this impetuous young man. Quite in vain did several lawyers point out to him that if justice really existed there would be no need for law and lawmakers, and thus one of mankind's noblest conceptions would be obliterated and an entire occupational group would be thrown out of work.

This lucid argument brought no peace to the frenzied Marvin, who gave every appearance of a man insusceptible to reason. The breath rasped and rattled in his throat as he roared his contempt for the Justice machinery of Mars. It was in this mood that he came to a door marked Bureau of Detection and Apprehension, Interstellar Division.

"Aha!" Marvin muttered, and entered the office.

He found himself in a small room which looked like something out of the pages of an old historical novel. Against the wall were dignified banks of old but reliable electronic calculators. Near the door was an early model thought-to-print translator. The arm chairs had the abrupt shape and pastel plastic upholstery which we associate with a more leisurely era. The room lacked only a bulky solid-state Moraeny to make it a perfect replica of a scene from the pages of Sheckley or one of the other early poets of the Age of Transmission.

There was a middle-aged Martian seated in a chair throwing darts at a target shaped like a woman's bottom.

He turned hastily when Marvin came in and said, "It's about time. I was expecting you."

"Were you really?" Marvin asked.

"Well, not really," the Martian said. "But I have found that it makes an effective opening, and tends to create an atmosphere of trust."

"Then why do you ruin it by telling me?"

The Martian shrugged his shoulder and said, "Look, no one's perfect. I'm just an ordinary working detective. Urf Urdorf's the name. Sit down. I think we have a lead on your missing fur coat."

"What fur coat?" Marvin asked.

"Aren't you Madame Ripper de Lowe, the transvestite who was robbed last night in the Red Sands Hotel?"

"Certainly not. I'm Marvin Flynn. I lost my body."

"Of course, of course," Detective Urdorf said, nodded vigorously. "Let's take it point by point. Do you remember by any chance where you were when you first noticed that your body was

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missing? Could any of your friends have taken it as a joke? Or could you have merely misplaced it, or perhaps sent it on a vacation?"

"I didn't really *lose* it," Marvin said. "Actually, it was stolen."

"You should have said so in the first place," Urdorf said. "That tends to put the matter in a different light. I am only a detective; I have never claimed to be a mindreader."

"I'm sorry," Marvin said.

"I'm sorry, too," Detective Urdorf said. "About your body, I mean. It must have been quite a nasty shock."

"Yes, it was."

"I can well understand how you feel."

"Thank you," Marvin said.

They sat in companionable silence for several minutes. Then Marvin said, "Well?"

"I beg your pardon?" the detective replied.

"I said, 'well?' "

"Oh. I'm sorry, I'm afraid I didn't hear you the first time."

"That's quite all right."

"Thank you."

"You're extremely welcome."

There was another silence. Then Marvin said, "Well?" once again, and Urdorf said, "I beg your pardon?"

Marvin said, "I want it back."

"What?"

"My body."

"Your what? Oh, yes, your body. Hmm, I daresay you do," the detective said, with an appreciative smile. "But of course, it isn't as easy as that, is it?"

"I wouldn't know," Marvin said.

"No, I don't suppose you would," Urdorf said. "But I can assure you that it isn't as easy as that."

"I see," Marvin said.

"I rather hoped you would," Urdorf said, and lapsed into silence.

This silence lasted for approximately twenty-five seconds, give or take a second or two. At the end of that time Marvin's patience collapsed and he shouted, "Goddam it are you going to do something about getting me back my body or are you going to just sit there on your goddam fat butt and talk without saying anything?"

"Of course I am going to get you your body," the detective said. "Or in any case, I am going to try. And there is no reason for abuse. I am not, after all, some machine filled with tabulated answers. I am an intelligent being just like yourself. I have my own hopes and fears. And I have my own way of conducting an interview. This way may seem ineffectual to you, but I have found it extremely useful."

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"Have you really?" asked Marvin, chastened.

"Why yes, as a matter of fact I have," the detective replied, his mild voice showing no trace of rancor.

Another silence seemed about to begin, so Marvin asked, "What sort of chance do you think I have — we have — for recovering my body?"

"A most excellent chance," Detective Urdorf replied. "In fact, I think I could go so far as to say that I am certain of success. I base this not on a study of your particular case, about which I know very little, but on the simple statistics involved."

"Do the statistics favor us?" Marvin asked.

"Most assuredly! Consider: I am a trained detective, conversant with all the new methods and possessing a top efficiency rating of AA-A. Yet in spite of this, during my five years with the force, I have never solved a case."

"Not a single one?"

"Not a single one," Urdorf said firmly. "Interesting, isn't it?"

"Yes, I suppose it is," Marvin said. "But doesn't that mean —"

"It means," the detective said, "that one of the strangest runs of bad luck that I have ever heard of is statistically due to break."

Marvin was nonplussed, which is an unusual sensation in a Martian body. He said, "But suppose your luck doesn't break?"

"You must not be superstitious," the detective replied. "The probabilities are there; even the most casual examination of the situation should convince you of that. I have been unable to solve one hundred and fifty-eight cases in a row. You are my 159th. How would you bet if you were a betting man?"

"I'd stay with the run," Marvin said.

"So would I," the detective admitted, with a self-deprecating smile. "But we would be betting on emotion rather than on the calculations of our intellect." Urdorf looked at the ceiling dreamily. "One hundred and fifty-eight failures! It's a fantastic record. A run like that simply has to break! I could probably sit here in my office and do nothing, and the criminal would find his way to me."

"Yes sir," Marvin said politely. "But I hope you won't test that particular approach."

"Well, no," Urdorf said. "I tried that with number 156. No, I shall pursue your case actively. Especially since it is a sex crime, which is the sort of thing I am interested in."

"I beg your pardon?" Marvin said.

"There is really no need to

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apologize," the detective assured him. "One should not be embarrassed or guilty by reason of being the victim of a sex crime, even though the deepest folk wisdom of many cultures attaches a stigma to being such a victim, on the presumption of conscious or unconscious complicity."

"No, no, I wasn't apologizing," Marvin said. "I was merely—"

"I quite understand," the detective said. "But you mustn't be ashamed to tell me all the bizarre and loathsome details. You must think of me as an impersonal official function instead of as an intelligent being with sexual feeling and fears and urges and quirks and cravings—"

"What I was trying to tell you," Marvin said, "is that there is no sex crime involved here."

"They all say that," the detective mused. "It is strange how the human mind is forever unwilling to accept the unacceptable."

"Look," Marvin said, "if you would take the time to read over the facts of the case, you would see that it was a case of an outright swindle. Money and self-perpetuation were the motives."

"I am aware of that," the detective said. "And, were I unaware of the processes of sublimation, we could leave it at that."

"What possible motive could the criminal have had?"

"His motive is obvious," Urdorf said. "It is a classic syndrome. You see, this fellow was acting under a specific compulsion, for which we have a specific technical term. He was driven to his deed in an advanced state of obsessive projective narcisism."

"I don't understand," Marvin said.

"It is not the sort of thing which the layman is apt to encounter," the detective told him.

"What does it mean?"

"Well, I can't go into the entire etiology. But essentially, the dynamics of the syndrome involve a displaced self-love. That is to say; the sufferer falls in love with another, but not as other. Rather, he falls in love with the Other as Himself."

"All right," Marvin said, with resignation. "Will this help us find the man who stole my body?"

"Well, no," said the detective. "But it will enable us to understand him."

"How soon can you begin?" Marvin asked.

"I have already begun," the detective replied. "I shall send for the court records, of course, and all other documents pertaining to this matter, and I shall contact all relevant planetary authorities for additional information.

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I will spare no effort, and I will travel to the ends of the universe if necessary or desirable. I shall solve this case!"

"I'm very glad you feel that way," Marvin said.

"One hundred and fifty-eight cases without a break," Urdorf mused. "Have you ever heard of such a run of bad luck? But it will end here. I mean to say, it can't go on indefinitely, can it?"

"I don't suppose that it can," Marvin said.

"I wish my superiors would take that view," the detective said gloomily. "I wish they'd stop calling me 'stumblebum.' Words like that, and sneers, and lifted eyebrows, all tend to shake one's confidence. Luckily for me, I have an implacable will and utter self-confidence. Or at least I did have through my first ninety or so failures."

The detective brooded darkly for several moments, then said to Marvin:

"I will expect your complete and utter cooperation."

"You shall have it," Marvin said. "The only trouble is, I am to be dispossessed of this body in less than six hours."

"Damned awkward," Urdorf said absent-mindedly. He was obviously thinking about his case, and only with difficulty did he turn his attention back to Marvin. "Dispossessed, eh? I suppose you've made other arrangements. No? Well then, I suppose you *will* make some other arrangements."

"I don't know what arrangements to make," Marvin said gloomily.

"Well, no need to argue the matter," the detective said, in a determinedly cheerful voice. "Find yourself another body somewhere; and above all, stay alive! I want you to promise me that you'll really try your level best to stay alive."

"I promise," Marvin said.

"And I shall proceed with your case, and I will contact you as soon as I have anything to report."

"But how will you find me?" Marvin asked. "I don't know what body I'll be in, or even what planet."

"You forget that I am a detective," Urdorf said, smiling faintly. "I may have my troubles in finding criminals, but I have never experienced the slightest difficulty in finding victims. So keep your chin up, don't lose the old moxie, and above all, remember to stay alive!"

Marvin agreed to stay alive, since he had planned on it, anyhow.

And he went out into the street with his precious time flowing away and still without a body.

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VII

Headline in the Martian Sun-News (tri-planet edition):

SWAP SCANDAL

Police officials on Mars and Terra revealed today the existence of a Mind-swap scandal. Wanted for questioning is Ze Kraggash, species unknown, who allegedly sold, swapped, or otherwise disposed of his body to twelve Beings simultaneously. Warrants have been issued for Kraggash's arrest, and the police of the tri-planet area confidently expect to make an announcement soon. The case is reminiscent of the infamous 'Eddie Two-Head' scandal of the early 90's, in which . . .

Marvin Flynn let the newspaper fall into the gutter. He watched as the flowing sand bore it away; the bitter ephemerality of the newsprint seemed a paradigm of his own highly conditional existence. He stared at his hands; his head drooped.

" 'Ere now, 'ere now, what seems to be the trouble, eh, lad?"

Flynn looked up into the kindly blue-green face of an Erlan.

"I've got troubles," Flynn said.

"Well then, let's hear 'em," the Erlan said, folding himself down on the curb beside Flynn. Like all of his race, the Erlan combined a quick sympathy with brusque manners. Erlans were known as a rough, witty people, much given to cheerful banter and homely sayings. Great travellers and traders, the Erlans of Erlan II were religiously required to travel in *corpore*.

Marvin told his story, right up to the disconsolate moment of the forward-surging *now;* the cruel and remorseless now, the hungry now, eating into his little stock of minutes and seconds, pressing forward to the time when his six hours would have elapsed, and bodyless, he would be cast into that unknown galaxy which men call death.

"Garn!" the Erlan said. "Not half sorry for yourself, are you?"

"You're damned right I'm sorry for myself," Flynn said, with a flash of anger. "I'd be sorry for anyone who was going to die in six hours. Why shouldn't I be sorry for myself?"

"Suit yourself, cook," the Erlan said. "Some might call it bad form and all the bumf, but me, I hold with the teachings of the Guajuoie, who said; 'Is it death which snuffles near you? Strike it on the snout!' "

Marvin respected all religions, and certainly had no prejudices against the widespread Antidescantine Rite. But he couldn't see how the Guajuoie's words could help him, and he said so.

"Buck up!" the Erlan said. "Got yer brains and yer six hours, ain't yer?"

"Five hours."

"Well, then! Git up on your hind legs and show a little grit,

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er, cobber? Won't do yourself much good maundering around here like a bloody old lag, will you now?"

"I don't suppose I will, really," Marvin said. "And yet, what can I do? I have no body, and hosts are expensive."

"Too true, But did you ever fink of the Open Market? Eh?"

"But that's supposed to be dangerous," Marvin said, and blushed at the absurdity of his statement. The Erlan grinned toughly.

"Got the picture, eh, lad? But listen, it ain't so bad as you fink, 'long as you buck up and take aholt. Open Market's not so bad; been a lot of rot talked about it, mostly by the big swap agencies that wanna go on charging their overinflated capitalistic damned fees. But I know a bloke been working there twenty years on Short Shuffles, and he tells me most of the blokes is straight as a die. So keep your head and your chest prop tucked in tight, and pick yourself a good interman. Good luck, kid."

"Wait a moment!" Flynn cried, as the Erlan folded to his feet. "What is your friend's name?"

"James Virtue McHonnery," the Erlan said. "He's a tough, hard-bitten, narrow-minded little cuss, and overfond of looking upon the grape when it is red, and inclined to be smitten by black rage when in his cups. But he deals flat and he serves straight, and you couldn't ask no more than that from St. Xal himself. Just tell him that Pengle the Squib sent you, and good luck to you."

Flynn thanked the Squib eagerly, embarrassing that tough yet good-hearted gentleman. Rising to his feet, he proceeded, slowly at first, then with more speed, toward the Quain, in the northwest corner of which lay the many stalls and open booths of the Open Market. And his hopes, previously near maximum entropy, began now to pulse modestly yet firmly with hope.

And in the nearby gutter, tattered newspapers flowed on a stream of sand toward the eternal and enigmatic desert.

"Hey-ya! Hey-ya! New bodies for old! Come and be serviced—new bodies for old!"

Marvin trembled when he heard that ancient street cry, so innocent in itself, yet so reminiscent of dark bedtime stories. Hesitantly he advanced into the tangled labyrinth of streets and alleys, or dead-ends and courtyards, that made up the ancient Free Market Area. And as he walked, a dozen shouted propositions assailed his aural receptors.

"Harvesters wanted to harvest

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the crop on Drogheda! We supply you with a fully functional body complete with telepathy! All found, fifty credits a month, *and* a complete list of Class C-3 pleasures! Special two-year contracts are now being let. Come harvest the crop on beautiful Drogheda!"

"Serve in the Naigwin Army! Twenty NCO bodies currently on offer, plus a few specials in junior officer ranks. All bodies will be fully equipped with Martial skills!"

"What's the pay?" a man asked the salesman.

"Your keep, plus one credit a month."

The man sneered and turned away.

"*And,*" the barker proclaimed, "unlimited sacking right."

"Well, that seems in order," the man said grudgingly. "But the Naigwins been losing this war for a decade. High casualty rate, and not much corporeal reclamation."

"We're changing all that," the salesman said. "You're an experienced mercenary?"

"Correct," the man said. "The name is Sean Von Ardin, and I've been in just about every major war around, plus a fair number of minor ones."

"Last rank?"

"Jevaldher in the army of the Count of Ganymede," Von Ardin said. "But before that I held the rank of Full Cthusis."

"Well, well," the salesman said, seemingly impressed. "Full Cthusis, eh? Got papers to prove it? Okay, tell you what I can do. I can offer you a position with the Naigwins as Manatee Leader, Second Class."

Von Ardin frowned and calculated on his fingers. "Let's see, Manatee Leader Second Class is the equivalent of a Cyclopian Demi-Vale, which is slightly better than an Anaxorean Banner King, and almost half a grade lower than a Dorian Old Boy. Which means . . . Hey, I'd lose an entire field grade if I joined you!"

"Ah, but you didn't hear me out," the salesman continued. "You would hold that rank for a period of 25 days, to prove Purity of Intent, which the Naigwin political leaders are very big on. *Then* we would jump you three entire grades to Melanoan Superios, which would offer you an excellent chance at provisional Lance-Jumbaya, and maybe—I can't promise this, but I think I can swing it unofficially—*maybe* I can get you appointed Sackmeister for the spoils of Eridsvurg."

"Well," Von Ardin said, impressed in spite of himself, "that's a pretty decent deal—if you can swing it."

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"Come into the store," the salesman said. "Let me make a phone call . . ."

Marvin walked on, and listened to men of a dozen races arguing with salesmen of a dozen more. A hundred propositions were screamed in his ear. His spirits were stirred and uplifted by the vitality of the place. And the propositions he heard, though sometimes dismaying, were often intriguing:

"Aphid-man wanted for the Senthis Swarm. Good pay, congenial friendships!"

"Rewrite man to work on the Dirty Book of Kavengii! Must be able to empathize with sexual premises of the Midridarian race!"

"Garden planners needed for Arcturus! Come and relax among the only vegetable-sentients in the galaxy!"

"Expert manacler wanted for Vega IV! Opportunities also for semi-skilled restrainers! Full prerogatives!"

There were so many opportunities in the galaxy! It seemed to Marvin that his misfortune was perhaps a blessing in disguise. He had wanted to travel—but his modesty had permitted him no more than the role of tourist. But how much better, how much more gratifying it would be, to travel for a reason. To serve with the armies of Naigwin, experience life as an aphid-man, learn what it meant to be a manacler—even to do rewrites on the Dirty Book of Kavengii.

Directly ahead of him, he spotted a sign which read: "James Virtue McHonnery, licensed Short Shuffle Dealer. Satisfaction guaranteed."

Standing at the waist-high counter and smoking a cigar was a tough, hard-bitten, sour-mouthed little man with piercing cobalt-blue eyes. This could be none other than McHonnery himself. Silent and disdainful, scorning to spiel, the little man stood with arms folded as Flynn walked up to the booth.

VIII

They stood face to face, Flynn slack-jawed, McHonnery clam-mouthed. Several seconds of silence ensued. Then McHonnery said: "Look, kid, this ain't no goddam peep show and I ain't no goddam freak. If you got something to say, spit it out. Otherwise take a walk for yourself before I break your back."

Marvin could see at once that this man was no fawning, honey-mouthed body salesman. There was no hint of obsequiousness in that rasping voice, no trace of ingratiation in that down-turned mouth. Here was a man who said

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what he wanted to say, and took no heed of the consequences.

"I—I am a client," Flynn said.

"Big deal," McHonnery harshed. "Am I supposed to turn handsprings or something?"

His sardonic retort and blunt, inner-directed demeanor gave Flynn a sensation of confidence. He knew, of course, that appearances could be deceiving; but no one had ever told him what to judge by instead of appearances. He was inclined to trust this proud and bitter man.

"I am going to be dispossessed of this body in a matter of hours," Marvin explained. "Since my own body has been stolen, I am in desperate need of a substitute. I have very little money, but I—I am quite willing and prepared to work."

McHonnery stared at him, and a sardonic grin twisted the man's tight lips. "Prepared to work, huh? Ain't that nice! And just what are you prepared to work *at*?"

"Why—anything."

"Yeah? Can you operate a Montcalm metal lathe with light-sensitive switchboard and manual cull? No? Think you could handle a Quick-Greeze Particle Separator for the Rare Earths Novelty Company? Not your sort of thing, huh? I got a surgeon on Vega who wants somebody to run his Nerve-Impulse-Rejection Simulator—the old model with the double pedals. Not exactly what you had in mind? Well, we got a jazz band on Potemkin II which needs a stomachhorn man, and a restaurant near Bootes which could use a short-order cook, with working knowledge of Cthensis specialties. Doesn't ring a bell? Maybe you could pick flowers on Moriglia; of course, you'd have to be able to predict anthesis without more than a five-second variation. Or you could do spot-flesh-welding, if you've got the nerves for it, or boss a phylopod reclamation project, or draw up intermediate creeper systems, or—But I don't guess none of them strike your fancy, huh?"

Flynn shook his head and mumbled, "I don't know anything about any of those jobs."

"Somehow," McHonnery said, "that doesn't surprise me as much as you might think. Is there anything you *can* do?"

"Well, in college I was studying—"

"Don't give me your goddam life story! I'm interested in your trade, skill, talent, profession, ability, whatever you want to call it. What, specifically, can you *do*?"

"Well," Marvin said, "I guess when you put it that way, I can't do anything much."

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"I know," McHonnery said, sighing. "You're unskilled. It's written all over you. Kid, it may interest you to know that unskilled minds are common as dirt, commoner. The market's glutted with them, the universe is crammed to overflowing with them. There is nothing you can do that a machine can't do better, faster, and a damn sight more cheerfully."

"I'm sorry to hear that, sir," Marvin said, sadly but with dignity. He turned to go.

"Just a minute," McHonnery said. "I thought you wanted to work."

"But you said—"

"I said you were unskilled, which you are. And I said that a machine can do anything you can do better, faster, and more cheerfully; *but not more cheaply*."

"Oh," Marvin said.

"Yep, in the cheapness department, you still got an edge over the gadgets. And that's quite an achievement in this day and age."

"I suppose there's a certain comfort in that," Flynn said doubtfully. "And of course, it's very interesting. But when Pengle the Squib told me to see you, I thought—"

"Hey, how's that?" McHonnery said. "You're a friend of the Squib?"

"You might say that," Flynn said, avoiding an outright lie.

"You should have told me that in the first place," McHonnery said. "Not that it would have changed anything, since the facts are exactly as I have stated them. But I'd have told you that there's no shame in being unskilled. Hell, all of us have to start out that way, don't we? If you do well on a Short Shuffle contract, you'll pick up skills in no time."

"I hope so, sir," Flynn said, growing cautious now that McHonnery had become affable. "Do you have a job in mind for me?"

"As a matter of fact, I do," McHonnery said. "It's a one-week Shuffle, which, even if you don't like it, you could do standing on your head. Not that you should have to, since it's a pleasant and compatible job, combining mild outdoor exercise with modest intellectual stimulation, all in a framework of good working conditions, enlightened management and a congenial working force."

"It sounds marvelous," Flynn said. "What's wrong with it?"

"Well, it's not the sort of job you can get rich at," McHonnery said. "In fact, the pay is lousy. But what the hell, you can't have everything."

"What is the job?" Marvin asked.

"The official job title is Ootheca Indagator, Second Class."

"That sounds impressive."

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"Glad that you like it. It means that you hunt for eggs."

"Eggs?"

"Eggs. Or to be more specific, you hunt for and, upon finding, collect, the eggs of the Rook Ganzer. Think you can swing it?"

"Well, I'd like to know a little more about the techniques utilized for the collecting, and also about job conditions, and—"

He stopped because McHonnery was slowly, sadly shaking his head. "You want the job?"

"Do you have anything else available?"

"No."

"I'll take it."

"You've made a smart decision," McHonnery said. He took a paper out of his pocket. "Here is the standard government-approved contract, written in Kro-Melden, which is the official language of the planet Melde II, wherein is licensed the employing company. Can you read Kro-Melden?"

"I'm afraid not."

"Well, it's just standard stuff . . . Company not being responsible for fire, earthquake, atomic warfare, sun going nova, acts of god or gods . . . Company agrees to hire you . . . furnish you with a Melde body . . . unless it finds itself unable to do so, in which case it won't . . . and may God have mercy on your soul."

"I beg your pardon?" Flynn asked.

"The last is just the standard invocation. Let me see, I think that about covers it. Your guarantee, of course, not to commit acts of sabotage, espionage, irreverance, disobedience, etc., and to furthermore eschew and desist from the practices of sexual perversion as defined in Hoffmeyer's *Standard Manual of Melden Perversions.* And you also guarantee to wash once every two days, and to stay out of debt, and not to become an alcoholic or insane person, and various other things to which no reasonable person could possibly object. And that about sums it up. If you have any important questions, I'll endeavor to answer them for you."

"Well," Flynn said, "about those things I'm supposed to guarantee —"

"That's unimportant," McHonnery said. "Do you want the job or not?"

Marvin had his doubts.

The next thing he knew, he was in a Melden body, on Melde.

IX

The ganzer rain-forest on Melde was deep and wide. The faintest ghost of a breeze whispered among the colossal trees, slithered through the interlocked vines, and crept broken-

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backed over hook-edged grass. Drops of water slid painfully down, and around the tangled foliage like exhausted runners of a maze coming to rest at last in the spongy and indifferent soil. Shadows mingled and danced, faded and reappeared, called into spurious motion by two tired suns in a moldy green sky. Overhead, a desolate therengol whistled for his mate, and heard in reply the quick ominous cough of a predatory kingspringer.

And through this dolorous woodland, so tantalizingly like Earth and yet so different, Marvin-Flynn moved in his unfamiliar Melden body, his eyes downcast, searching for ganzer eggs but not knowing what they looked like.

All had been haste. From the moment he arrived on Melde, he had barely had a chance to take stock of himself. No sooner was he bodified than someone was barking orders in his ear.

Flynn had just had time to look hastily over his four-armed, four-legged body, give his tail a single experimental flick and fold his ears across his back; then he was herded into a work gang, given a barracks number and a mess hall location and handed a jumper two sizes too big for him, and shoes which fitted tolerably well except for the left front. He signed for and was given the tools of his new trade: a large plastic bag, dark glasses, a compass, a net, a pair of tongs, a heavy metal tripod and a blaster.

He and his fellow-workers were then assembled in ranks, and received a hasty indoctrination by the manager, a bored and supercilious Atreian.

Flynn learned that his new home occupied an insignificant portion of space in the vicinity of Aldeberan. Melde was a thoroughly second-rate world. Its climate was rated "intolerable" on the Hurlihan-Chanz Climatic Tolerance Scale; its natural resource potentiality was classified "submarginal," and its esthetic resonance factor (unweighted) was given as "unprepossessing."

"Not the sort of place," the manager said, "that one would choose for a vacation; or indeed for anything."

His audience tittered uneasily.

"Nevertheless," the manager continued, "this unloved and unlovely place, this solar misfortune, this cosmic mediocrity, is home to its inhabitants, who consider it the finest place in the universe."

The Meldens, with a fierce pride in their only tangible asset, had made the best of their bad bargain. With the plucky determination of the eternally

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unlucky, they had farmed the edges of the rain forest and collected meager low-yield ores from the vast blazing deserts. Their dogged persistence would have been inspiring — had it not invariably ended in failure.

Said the manager, "This is what Melde would be were it not for one additional factor. Ganzer eggs! No other planet possesses them; no other planet so desperately needs them."

Ganzer eggs were the sole export of the planet Melde. And luckily for the Meldens, the eggs were always in heavy use. On Orichades, ganzer eggs were utilized as love-objects; on Ophiuchus II, they were ground up and eaten as a sovereign aphrodisiac; on Morichades, after consecration, they were worshipped by the irrational K'tengi.

Thus, ganzer eggs were a vital natural resource — and the only one which the Meldens possessed. With them, the Meldens could maintain a tolerable degree of civilization. Without them, the race would surely perish.

To acquire a ganzer egg, all one had to do was pick it up. But therein lay certain difficulties, since the ganzers objected to this practice.

The ganzers were forest dwellers, remotely of lizard origin. They also were destroyers, clever at concealment, wily and ferocious, and completely untamable. These qaulities rendered the collection of ganzer eggs extremely perilous.

"It is a curious situation," the manager pointed out, "and not without its paradoxical overtones. The main source of life on Melde is also the main cause of death. It is something for you all to think about as you begin your work-day. And so I say, take good care of yourselves, keep guarded at all times, look before you leap, observe every precaution with your indentured lives, and also with the costly bodies which have been entrusted to your keeping. But in addition, remember that you must fulfill your norm, since every day's work unfulfilled by so much as a single egg is penalized by the addition of an additional week. Good luck, boys!" Marvin and his fellow workers were then formed into ranks and marched into the forest on the double.

Within an hour they reached their search area. Marvin Flynn took this opportunity to ask the foreman for instructions.

"Instructions?" the foreman asked. "What kind of type instructions?" (He was an Orinathian deportee with no language aptitude.)

"I mean," Flynn said, "what am I supposed to do?"

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The foreman pondered the question and at length responded. "You supposed pick eggs of ganzer." (He pronounced it 'guntser.')

"I understand that," Flynn said. "But I mean to say, I don't even know what a ganzer egg looks like."

"Not to worry," the foreman replied. "You know when see no mistake, yes."

"Yes sir," Marvin said. "And when I find a ganzer egg, are there any special rules for handling it? I mean to say, is breakage a problem, or—"

"To handle," the foreman said, "you pick up egg, put in bag. You understand this thing yes no?"

"Of course I do," Marvin said. "But also, I would like to know about daily quota expectations. Is there some sort of a quota system? Perhaps an hourly breakdown?"

"Ah!" said the foreman, a look of comprehension finally crossing his broad, good-natured face. "Of finish is like this. You pick ganzer egg, put in bag, check?"

"Check," Marvin said instantly.

"You do so time after time *until bag is full.* Catch?"

"I believe I do," Marvin said. "The full bag represents the actual or ideal quota. Let me just go over the steps again to make absolutely sure I've got it. First, I locate the ganzer eggs, applying Terran associations to the concept, and presumably having no difficulty in identification. Second, having located and identified the desired object, I proceed to 'put it in my basket,' by which I assume that —"

"Wait minute." The foreman tapped his teeth with his tail and said, "You put me on, huh, kid?"

"Well, sir, I merely wished to ascertain—"

"You make big joke on old-planet Orinathian yokel. You think you so smart. You ain't so smart. Remember—nobody likes wise guy."

"I'm sorry," Flynn said, swishing his tail deferentially.

"Anyhow, me I tink you catch elementary rudiments of job all right so you go now perform work-labor *big.* Keep nose clean. Or I break six or more of your limbs, dig?"

"Dig," said Flynn, wheeled and cantered into the forest and there began his search.

X

Marvin Flynn slid silently through the forest, his nostrils flared wide, his eyes extended and swivelling, their blink-rate reduced. His golden hide, scented faintly with appisthyme, twitched sensitively as his great muscles moved beneath it, apparently relaxed yet poised.

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The forest was a symphony of greens and grays, cut through with the occasional scarlet theme of a creeper, or the purple flourish of a lillibabba shrub, or rarer still, the haunting oboe countermelody of an orange whipwhinger. Yet the effect was essentially somber and thought provoking, like a vast amusement park in the silent hour before dawn.

But there! Right over there! A little to the left! Yes, yes, just beneath the boku tree! Is that . . . . Could it be . . . .

Flynn parted the leaves with his right arms and bent low. There, in a nest of grass and woven twigs, he saw something that glittered like an ostrich egg encrusted with precious gems.

The foreman had been right. There could be no mistaking a ganzer egg.

A million fairy fires burned bright in the curved and multihued ganzer surface. Shadows drifted across it like half remembered dreams, twisting and turning. An emotion welled up in Marvin of twilight and evensong, of slow cattle grazing near a crystal brook, of dusty, heartbroken cypresses.

Although it wrenched his sensibilities to do so, Marvin bent down and reached out. His hand folded lovingly around the glowing orb.

He pulled his hand back quickly. The glowing orb was hotter than hell.

Marvin looked at it with new respect. Now he understood the purpose of the tongs with which he had been equipped. He closed them gently on the spheroid of dreams.

The sphere of dreams bounced away from him like a rubber ball. Marvin galloped after it, fumbling with his net. The ganzer egg twisted and ricocheted, and bolted for thick underbrush.

Marvin cast his net in desperation and fortune guided his hand. The ganzer egg was neatly netted.

It lay quietly, pulsating as though out of breath. Marvin approached it cautiously, ready for any trick.

Instead the ganzer egg spoke. "Look, mister," it said in a muffled voice. "Just what's eating you?"

"Beg pardon?" Marvin said. "Look," the ganzer egg said, "I am sitting here in a public park minding my own business when suddenly you come up and pounce on me like a lunatic, bruising me and acting like some kind of nut. Well, naturally I get a little hot. Who wouldn't? So I decide to move away because it's my day off and I don't want no trouble. So you up and throw

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a net around me like I was a goddam *butterfly* or something. So I just want to know, what's the big idea?"

"Well," Marvin said, "you see, you're a ganzer egg."

"I'm aware of that," the ganzer egg said. "Sure I'm a ganzer egg. Is there a law against that all of a sudden?"

"Certainly not," Marvin said. "But as it happens, I am hunting ganzer eggs."

There was a short silence. Then the ganzer egg said, "Would you mind repeating that?"

Marvin did. The ganzer egg said, "Mmm, that's what I thought you said." He laughed feebly. "You're kidding, aren't you?"

"Sorry, I'm not."

"Sure you are," the ganzer egg said, a note of desperation in his voice. "So okay, you've had your fun. Now let me out of here."

"Sorry . . ."

"*Let me out!*"

"I can't."

"Why?"

"Because I'm hunting ganzer eggs."

"My God," the ganzer egg said, "this is the craziest thing I've ever heard in my life. You never met me before, did you? So why are you hunting me?"

"I've been hired to hunt ganzer eggs," Marvin told him.

"Look, fella, you just go around hunting any ganzer eggs at all? You don't care which one?"

"That's right."

"And you aren't really looking for one *particular* ganzer egg who maybe did you a bad turn?"

"No, no," Marvin said. "I've never even met a ganzer egg before."

"You've never . . . And yet you hunt . . . I must be going out of my mind, I can't be hearing right. I mean, things like this just don't happen. It's like some kind of an incredible nightmare . . . some crazy-looking guy walking up calm as you please and grabbing you and saying, dead-pan, 'I happen to be hunting for ganzer eggs.' I mean—look, fella, you *are* putting me on, aren't you?"

Marvin was embarrassed and exasperated, and he wished the ganzer egg would shut up. He said gruffly, "I'm not fooling. My job is to collect ganzer eggs."

"Collect . . . ganzer eggs!" the ganzer egg moaned, "Oh no, no, no, no! My God, I can't believe this is happening, and yet it really is happening, it really is—"

"Control yourself," Marvin said; the ganzer egg was clearly on the thin edge of hysteria.

"Thank you," the ganzer egg said, after a moment. "I'm all right now. Look, could I ask you just one question?"

"Hurry it up," Marvin said.

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"The thing I want to ask," the ganzer egg said, "do you get some kind of a charge out of this sort of thing? I mean are you some sort of pervert? I don't mean to be insulting."

"That's all right," Marvin said. "No, I'm not a pervert, and I can assure you I take no pleasure in this. Believe me, I'm finding it very strange."

"*You're* finding it strange!" the ganzer egg said, his voice rising to a scream. "How do you think I feel? Do you think maybe I think it's *natural* for someone to come along like a nightmare and *collect* me?"

"Steady," Marvin said.

"Crazy," the ganzer egg whispered to himself. "He's absolutely and completely insane. May—may I leave a note for my wife?"

"There isn't time," Marvin said firmly.

"Then will you at least let me say my prayers?"

"Go ahead and say them," Marvin said. "But you'll really have to be quick about it."

"Oh Lord God," the ganzer egg intoned. "I don't know what is happening to me, or why. I have always tried to be a good person, and although I am not a regular churchgoer, You surely know that true religion is in the heart. I've maybe done some bad things in my life, I won't deny it. But Lord, why this punishment? Why me? Why not someone else, one of the real bad ones, one of the criminals? Why me? And why like this? Something is *collecting* me like I'm some sort of a *thing* . . . and I don't understand. But I know that You are All-Wise and All-Powerful, and I know that *You* are good, so I guess there must be a reason . . . even if I'm too stupid to see it. So look, God, if this is it, then okay, this is it. But could you look after my wife and kids? And could you especially look after the little one?" The ganzer egg's voice broke, but he recovered almost at once. "I ask especially for the little one, God, because he's lame and the other kids pick on him and he needs a lot—a lot of love. Amen."

The ganzer egg choked back his sobs. His voice became abruptly stronger.

"I'm ready now," he said to Marvin. "Do your damnedest, you lousy son-of-a-bitch."

But the prayer of the ganzer egg had unmanned Marvin completely. With eyes wet and fetlocks trembling, Marvin opened the net and released his captive. The ganzer egg rolled out a little distance and then stopped, clearly fearing a trick.

"You—you really mean this?" he asked.

"I do," Marvin said. "I was

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never cut out for this kind of work. I don't know what they will do to me back at the Camp, but I shall never gather a single ganzer egg!"

"Praise be the name of the Lord," the ganzer egg said softly. "I've seen a few strange things in my time, but it seems to me that the Hand of Providence—"

The hypothesis of the ganzer egg(known as the Interventionalist Fallacy) was interrupted by a sudden ominous crashing in the underbrush. Marvin whirled, and remembered the dangers of the planet Melde.

He had been warned, but had forgotten. And now, desperately, he fumbled for his blaster, which had become entangled in his net. Violently he wrenched at it, pulled it free, heard a shrill cry from the ganzer egg—

And then he was flung violently to the ground. The blaster spun away into the underbrush. And Marvin gazed up into slit black eyes beneath a low armored forehead.

No introductions were necessary. Flynn knew that he had met a full-grown adult marauding ganzer, and had met him under possibly the worst of all circumstances. The evidence was all too evident; the damning net, the tell-tale sunglasses, the revealing tongs. And closer still—closing on his neck—was the tooth-edged jaw of the gigantic saurian, so close that Marvin could see three gold molars and a temporary porcelain filling.

Flynn tried to wriggle free. The ganzer pressed him back with a paw the size of a yak saddle; his cruel claws, each the size of a pair of ice tongs, bit cruelly into Marvin's golden hide. The slavering jaws gaped hideously, descended, about to engulf his entire head . . .

XI

Suddenly time stopped! Marvin saw the ganzer's jaws arrested in mid-slaver, his bloodshot left eye fixed in mid-blink, and his entire great body gripped in a strange and unyielding rigidity.

Nearby, the ganzer egg was as motionless as a carven replica of itself.

The breeze was stopped in mid-career. Trees were caught in straining postures, and a merithean hawk was fixed in mid-flight like a dummy attached to a wire.

The sun stopped its inexorable rolling flight!

And in this strange tableau, Marvin stared with tremendous sensations in the direction of a single movement in the air three feet above his head and slightly to his left.

It began as a whorl of dust—broadened, expanded, expatiated,

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thickening at the base and becoming convex at the apex. The rotation came faster, and the figure solidified.

"Detective Urdorf!" Marvin cried. For it was indeed the Martian detective with a streak of bad luck who had promised to solve Marvin's case and to return to him his rightful body.

"Terribly sorry to barge in like this," Urdorf said, materializing fully and falling heavily to the ground.

"Thank God you have come!" Marvin said. "You have saved me from an extremely unpleasant fate, and now if you will help me out from under this creature—"

For Marvin was still pinned to the ground by the ganzer's paw, which had taken on the rigidity of tempered steel. From beneath it he was unable to wriggle.

"Sorry," the detective said, getting up and dusting himself off. "I'm afraid I can't do that."

"Why not?"

"Against the rules," Detective Urdorf told him. "Any displacement of bodies during an artificial induced temporal stoppage (which is what this is) could result in a Paradox, which is forbidden since it might result in a temporal implosion which might conceivably hove the result of warping the structure-lines of our continuum and thus destroy the universe. Because of this, any displacement is punishable by a prison sentence of one year and a fine of one thousand dollars."

"Oh, I didn't know that."

"Well, I'm afraid that's how it is," the detective said.

"I see," Marvin said.

"I rather hoped you would," the detective said.

There was a long and uncomfortable silence. Then Marvin said, "Well?"

"Beg pardon?"

"I said . . . I *meant* to say, why did you come here?"

"Oh," the detective said. "I wished to ask you several questions which had not occurred to me earlier, and which would assist me in the rigorous investigation and solution of this case."

"Ask away," Marvin said.

"Thank you. First and foremost, what is your favorite color?"

"Blue."

"But exactly what *shade* of blue? Please try to be exact."

"Robin's-egg blue."

"Hmmm." The detective noted it down in his notebook. "And now, tell me quickly and without thinking, what is the first number that comes into your mind?"

"87792.3," Marvin replied without hesitation.

"Um hum. And now, without reflection, tell me the name of the first popular song you can think of."

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"Orang-Utan Rhapsody," Marvin said.

"Ummmm. Fine," Urdorf said, snapping his notebook shut. "I think that covers everything."

"What was the purpose of those questions?"

"With this information, I will be able to test various suspects for corpus-vestigial responses. It is part of the Duulman self-identity quiz."

"Oh," Marvin said. "Have you had any luck yet?"

"Luck hardly enters into it," Urdorf replied. "But I can say that the case is proceeding in a satisfactory manner. We traced the thief to Iorama II, where he smuggled himself into a cargo-load of flash-frozen beef destined for Goera Major. On Goera he represented himself as a fugitive from Hage XI, which won him a good deal of popular favor. He managed to raise enough money for fare to Kvanthis, where he had cached his money. Staying no more than a day on Kvanthis, he boarded the local to the Fifty-stars Autonomous Region."

"And then?" Marvin asked.

"Then we lost track of him temporarily. Fiftystars Region contains no less than 432 planetary systems with a combined population of 300 billion. So as you can see, our work is cut out for us."

"It sounds hopeless," Marvin said.

"Quite the contrary, it is a very good break for us. Laymen always mistake complication for complexity. But our criminal will find no safety in mere multiplicity, which is always susceptible to statistical analysis."

"So what happens now?" Marvin asked.

"We continue analyzing, and then we make a projection based upon the probabilities, and then we send our projection across the galaxy and see if it goes nova . . . I am speaking figuratively, of course."

"Of course," Marvin said. "Do you really think you'll catch him?"

"I am fully confident of the results," Detective Urdorf said. "But you must have patience. You must remember that intergalactic crime is still a relatively new field, and therefore intergalactic investigation is newer still. There have been many crimes in which even the existence of a criminal could not be proven, much less detected. So in some respects, we are ahead of the game."

"I guess I'll have to take your word for it," Marvin said. "But about this situation I'm in at present—"

"It is the very sort of situation I have told you to avoid," the

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detective said severely. "Please remember that in the future—if you should manage to come out of this alive. Good luck, my friend."

Before Marvin's eyes, Detective Urdorf revolved, faster, faster, grew dimmer, and disappeared.

Time unfroze.

And Marvin gazed up again into the Ganzer's slit black eyes and low armored forehead, and saw the hideous gaping jaws descending, about to engulf his entire head—

XII

"Wait!" Marvin shouted.

"What for?" the ganzer asked.

Marvin hadn't thought that far. He heard the ganzer egg muttering, "Turn-about's fair play. And yet, he was kind to me. Still, what business is it of mine? Stick your neck out, somebody cracks your shell. And yet . . ."

"I don't want to die," Marvin said.

"I didn't suppose you did," the rock ganzer said, in a not-unfriendly voice. "And, of course, you want to discuss it with me. Ethics, morals, the whole bit. But I'm afraid not. We were specifically warned, you see, never to allow a Melden to talk. We were told to just do the job and get it over with; not to *personalize* it. Just do it and get on to the next bit of work. Mental hygiene, really. Therefore, if you would close your eyes . . ."

The jaws moved closer. But Marvin, filled with wild surmise, cried out: "Did you say *job?*"

"Of course, it's a job," the ganzer said. "There's nothing personal in it." He frowned, apparently annoyed at himself for having spoken.

"A job! Your job is to hunt Meldens, is that it?"

"Well, obviously. This planet of Ganzer isn't good for much, you see, except for hunting Meldens."

"But why do you hunt them?" Marvin asked.

"Well, for one thing, a ganzer egg can grow to full maturity only in the host-flesh of the adult Melden."

"I *say*," the ganzer egg said, rolling around with embarrassment, "must we get so damned *biological? I* mean to say, you don't hear me talking about *your* natural functions, do you?"

"And secondly," the ganzer continued, "our sole export is Melde hides, which are used for imperial vestments on Triana II, for good-luck charms on Nemo and for seat covers on Chrysler XXX. This quest for the elusive and deadly Melden is our sole means of maintaining a tolerable degree of civilization, and—"

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"That's exactly what they told me!" Marvin cried, and quickly repeated what the manager had said to him.

"My gosh!" said the ganzer.

Both realized the true situation now; that the Meldens were utterly dependent upon the Ganzers, who in turn were utterly dependent upon the Meldens. These two races hunted each other, lived and died for each other, and, through ignorance of guile, ignored any relationship between each other. The relationship was utterly symbiotic, but completely unacknowledged by either race. In fact, each race pretended that it alone was a Civilized Intelligence, and that the other was bestial, contemptible and of no account.

And it now occurred to both of them that they were, in equal measure, participants in the general concept of Humanity.

The realization was awesome; but Marvin was still pinned to the ground by the ganzer's heavy paw.

"This leaves me in a somewhat embarrassing situation," the ganzer said, after a while. "My natural tendency is to release you. But I am working on this planet under a contract, which stipulates—"

"Then you are not a real ganzer?"

"No. I am a Swapper like yourself, and I come from Terra!"

"My home planet!" Marvin cried.

"I had guessed as much!" the ganzer replied. "An American. Probably from the East Coast, perhaps from Connecticut or Vermont—"

"New York State!!" Marvin cried. "I am from Stanhope!"

"And I am from Saranac Lake," the ganzer said. "My name is Otis Dagobert, and I am 37 years old."

And with that, the ganzer lifted his paw from Marvin's chest. "We are neighbors," he said quietly. "And so I cannot kill you, just as I am reasonably sure you would be unable to kill me, had you the opportunity. And now that we know the truth, I doubt if we will be able to perform any portion of our terrible jobs. But that is a sad thing to find out, for it means that we are doomed to Contractual Discipline; and then if we do not obey, our Companies will give us Extreme Severance. And you know what that means."

Marvin nodded sadly. He knew all too well. His head drooped, and he sat in disconsolate silence beside his newly found friend.

"I can think of no way out," Marvin said, after giving the matter some thought. "Perhaps we could hide in the forest for a

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few days; but they would be sure to find us."

Suddenly, the ganzer egg spoke up. "Come now, perhaps it isn't as hopeless as you think!"

"What do you mean?" Marvin asked.

"Well now," the ganzer egg said, dimpling with pleasure, "it seems to me that one good turn deserves another. I could get into plenty of hot water for this . . . But to hell with that. I think I can find a way off this planet."

Both Marvin and Otis broke into exclamations of gratitude; but the ganzer egg stopped them at once.

"Maybe you won't thank me when you see what lies ahead," he said ominously.

"Nothing could be worse than this," Otis said.

"You'd be surprised," the ganzer egg said flatly. "You might be very surprised . . . This way, gentlemen."

"But where are we going?" Marvin asked.

"I'm taking you to meet the Hermit," the ganzer egg replied, and would say no more. He rolled purposefully away, and Marvin and Otis followed.

XIII

Through the rain forest wild and free they marched and rolled, ever alert for danger. But no creature menaced them, and they came at last to a clearing in the forest.

Here they saw a rude hut in the center of that clearing, and a humaniform creature dressed all in rags squatting in front of the hut.

"That is the Hermit," said the ganzer egg. "He's quite insane."

The two Terrans had no time in which to consider that information. The Hermit arose and cried, "Now stand, hold, halt! Reveal yourselves to my understanding!"

"I'm Marvin Flynn," Marvin said, "and this is my friend Otis Dagobert. We want to escape from this planet."

The Hermit didn't seem to hear them; he stroked his long beard and gazed thoughtfully at the treetops. In low, somber tones, he said:

"'Ere this moment came, a flight of geese
Passed low o'erhead, pressing woe;
The refuge and disconsolate owl did pass
This hid'n place of mine, bereft
Of that which nature freely gives but man denies!
The stars are silent when they light our home:
The trees themselves proclaim the flight of kings."

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"He means," the ganzer egg said, "that he had a feeling you'd be coming this way."

"Is he crazy or something?" Otis asked. "The way he talks—"

"Now rede me this! I'll have
no plattering roth to creep
between the interstices of
a mind
Proclaiming treason," the
hermit said.

"He doesn't want you to whisper to each other," the ganzer egg translated. "It makes him suspicious."

"I could figure that much out for myself," Flynn said.

"So go whistle," the ganzer egg said. "I was just trying to be helpful."

The hermit advanced several paces, halted, and said:

"What wot ye here aroon?"

Marvin looked at the ganzer egg, who remained obstinately silent. So, guessing at the meaning of the words, Marvin said, "Sir, we are trying to escape from this planet, and we have come to you for help."

The hermit shook his head and said,

"What barbrous tongue is
this? A thick-mouthed
sheep
Would clothe his meaning in
a sound more clear!"

"What does he mean?" Marvin asked.

"You're so smart, figure it out for yourself," the ganzer egg said.

"I'm sorry if I insulted you," Marvin said.

"Forget it, forget it."

"I really am sorry. I'd appreciate it if you'd translate for us."

"All right," the ganzer egg said, still a little sulkily. "He says he doesn't understand you."

"He doesn't? But what I said to him was clear enough."

"Not to him," the ganzer egg said. "You want to reach him, you'd better put it in meter."

"Me? I couldn't!" Marvin said, with that instinctual shudder of revulsion which all intelligent Terran males feel at the thought of verse. "I simply couldn't! Otis, maybe you—"

"Not me!" Otis said, alarmed.

"A silence swells and grows;
yet honest men
Speak bold, with well-formed
mouth! Melikes it not
What this development portends."

"He's getting edgy," the ganzer egg said. "You better have a shot at it."

"Perhaps you could do it for us," Otis suggested.

"I'm no fag," the ganzer egg sneered. "If you want to speak,

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you'll have to speak for yourselves."

"The only poem I can remember from school is the Rubaiyat," Marvin said.

"Well, go to it," the ganzer egg said.

Marvin thought, twitched and nervously said:

"Behold! A pilgrim from the forest war
Of race 'gainst race, does humbly implore
Your aid and sustenance, and help and hope.
Can you this humble earnest plea ignore?"

"Very shaky," whispered the ganzer egg. "But not bad for a first attempt." (Otis was giggling, and Marvin clouted him with his tail.)

The hermit replied:

"Well spoken, stranger! You shall have this aid.
Nay, more! For when men meet, despite their divers forms,
They needs must succor each one to his own."

More quickly now, Marvin replied:

"I hoped, in this ancient planetoid with dreams displayed
Of sunrise splendors, sunsets disarrayed,
That one poor pilgrim who did pass this way
Might find escape from terrors he surveyed."

The hermit said:

"I find thee apt: 'Tis parlous to relate
In these lean times a halting tongue may work
Quick mischief 'pon its saddened owner-lord."

Marvin said:

"Ah come, take Marvin Flynn away, and leave
The Rest to wrangle! He would grieve
To find his body torn and wounded; therefore now
He'd like to go, whilst others stand and cheer."

The hermit said:

"Away then, gentlemen! Hearts high,
Feet firm in stirrups, head uplifted be . . ."

And so they proceeded in singsong fashion to the hermit's hut, where they saw, hidden away under some sheets of bark, an illegal Mindsender, of an ancient and curious design. And Marvin

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learned that there was method in even the direst madness. For the hermit had been on this planet for less than a year, and already had made a considerable fortune by smuggling refugees to the less savory labor markets of the galaxy.

It was not ethical; but as the hermit put it?

"Call you it dastardly, then, the tricks I play
With this my engine? Sobeit! Nay, I'll not dispute
The arid-abstract trueness of your plea.
Yet think upon't; this folly to refuse bad wine
When chok't with desert thirst. Not so? Then why
So harshly judge the salvor of your life?
'Tis damned ingratitude of most perversity—
To slap the hand that plucked Death's grip from thee!"

A small amount of time passed. A job for Otis Dagobert had not been difficult to find. Despite his protestations to the contrary, the young man showed a small but very promising streak of sadism. Accordingly, the Hermit Swapped him into the mind of a dental assistant on Prodenda IX.

The ganzer egg wished Marvin the best of good fortune and rolled off into the forest toward his home.

"And now," the hermit said, "we come to the problem of you. It seems to me considering your personality quite objectively, that you have a definite aptitude as a victim."

"Me?" Marvin asked.

"Yes, you," the hermit replied.

"A victim?"

"Definitely a victim."

"I'm not so sure," Marvin replied. He stated it that way out of politeness; actually, he was quite sure that the hermit was wrong.

"Well, I'm sure," the hermit said. "And I daresay I've had more experience in job placement than you."

"I suppose you have. I notice that you are no longer speaking in verse."

"Of course not," the hermit said. "Why should I?"

"Because earlier," Marvin said, "you had been speaking only in verse."

"But that was entirely different," the hermit said. "I was outside then. I had to protect myself. Now I am in my house, and therefore quite safe."

"Does verse really protect you outside?" Marvin asked.

"Well, what do you think? I have lived on this planet for over a year, hunted by two murderous races who would kill me on sight

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if they could find me. And in that time I have suffered no harm whatsoever."

"Well, it's very fine, of course. But I don't quite see the relationship between your language and your safety."

"I'll be damned if I see it, either," the hermit said. "I like to think of myself as a rational man; but the efficacy of verse is one thing that I am reluctantly forced to accept on faith. It *works*; what more can I say?"

"Have you ever thought of experimenting?" Marvin asked. "I mean, speaking outside *without* your language of verse? You might find you don't need it."

"So I might," the hermit replied. "And if you tried walking on the ocean bottom, you might find that you didn't need air."

"It's not really the same thing," Marvin said.

"It's exactly the same thing," the hermit told him. "But we were talking about you and victimization. I repeat, you have an aptitude, which opens the possibility of an extremely interesting position for you."

"I am not interested," Marvin said. "What else do you have available?"

"Nothing else," the hermit said.

By a remarkable coincidence, Marvin heard at that moment a great crashing and thundering in the underbrush outside, and deduced that it was either the Meldens or the Ganzers, or both, coming in pursuit of him.

"I accept the job," Marvin said. "But you're wrong."

He had the satisfaction of the last word; but the Hermit had the satisfaction of the last deed. For, arranging his equipment and adjusting his dials, he closed the switch and sent Marvin off to his new career on the planet Celsus V.

XIV

On Celsus V the giving and receiving of gifts is a cultural imperative. To refuse a gift is unthinkable; the emotion it raises in a Celsian is comparable to the incest-dread of a Terran. Normally this causes no trouble. Most gifts are white gifts, intended to express various shades of love, gratitude, tenderness, etc. But there are also gray gifts of warning, and black gifts of death.

Thus, a certain public official received a handsome snout ring from his constituents. It was imperiously designed for two weeks' wear. It was a splendid object, it had only one flaw. It ticked.

A creature of another race might have flung it into the nearest ditch. But no Celsian in his right mind would do that. He

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wouldn't even have the ring examined. Celsians live by the motto: do not look a gift in the teeth. Besides, if word of his suspicion leaked out, it would cause an irreparable public scandal.

He had to wear that damned ring for two weeks.

But the thing was *ticking*.

The official, whose name was Marduk Kras, pondered the problem. He thought about his constituents, and various ways he had helped them, and various other ways he had failed them. The ring was a warning, that much was clear. It was *at best* a warning—a gray gift. At worst, it was a black gift—a small bomb of popular design, which would blow his head off after the elapse of several anxiety-ridden days.

Marduk was not suicidal; he knew that he could not wear that damned ring. But he also knew that he *had* to wear that damned ring. Thus, he found himself facing a classic Celsian dilemma.

"Would they do that to *me?*" Marduk asked himself. "Just because I rezoned their dirty old residential neighborhood for heavy industry, and entered into an agreement with the Landlord's Guild to raise their rents 320 per cent in return for a promise of new plumbing within fifty years? I mean to say, Good Lord, I've never pretended to be *perfect*."

The ring ticked merrily away, tickling his snout and alarming his senses. Marduk thought of other officials whose heads had been blown off by dim-witted hotheads. Yes, it might very possibly be a black gift.

"Those stupid molters!" Marduk snarled, relieving his feelings with an insult he would never have dared voice in public. He was feeling sorely aggrieved. You worked your hearts out for those slack-skinned, wart-nosed idiots, and what was your reward? A bomb to wear in your nose!

For one hectic moment he contemplated throwing the ring into the nearest chlorine tank. *That* would show them! And there was precedent for it. Had not the saintly Voreeg spurned the Total Offering of the Three Ghosts?

Yes . . . But the Ghosts' Offering, according to accepted exegesis, had been a subtle attack upon the spirit of Gift-Giving, and therefore at the very core of society; for by making a Total Offering, they had precluded the possibility of any future gifts.

Besides — what was admirable for a Saint of the Second Kingdom would be execrable for a petty official of the Tenth Democracy. Saints can do anything; ordinary men must do what is expected of them.

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Marduk's shoulders slumped. He plastered warm mud on his feet, but it brought no relief. There was no way out. One Celsian could not stand alone against organized society. He would have to wear the ring, and wait for the mind-splitting moment when the tick stopped . . .

But wait! There was a way!

Yes, yes, he could see it now! It would take clever arrangement; but if he brought it off, he could have safety *and* social approval. If only that damned ring gave him time . . .

Marduk Kras made several urgent calls, and arranged for himself to be ordered to the planet Taami II (the Tahiti of the Ten-Star Region) on urgent business. Not corporeally, of course. No responsible official would spend local funds to ship his body across a hundred light years when all that was required was his mind. Frugal, trustworthy Marduk would travel by Mindswap. He would satisfy the form, if not the spirit, of Celsian custom by leaving his body behind with the gift ring ticking merrily in its nose.

He had to find a mind to inhabit his body during his absence. But that was not difficult. There are too many minds in the galaxy, and not enough bodies to go around. (Why this should be, no one really knows. After all, everyone was given one of each to begin with. But some people always seem to end up with more than they need, be it wealth, power, or bodies; and some with less.)

Marduk got in touch with Hermit Enterprises (Bodies for Any Purpose). The hermit had just the thing for him; a clean-cut young Terran male in imminent danger of losing his life, and willing to take his chances with a ticking nose ring.

Thus Marvin Flynn came to Celsus V.

For once there was no need to hurry. Upon arrival, Marvin was able to follow prescribed Swapping procedures. He lay perfectly still, growing slowly accustomed to his new corpus. He tested his limbs, checked out his senses, and scanned the primary culture-configuration-load as radiated from the forebrain for analogue and similitude factors. Then he sized up the hindbrain emotional and structure factor for crux, nadir and saddlepoint. Nearly all of this was automatic.

He found the Celsian body a good fit, with a high aspect of jointure and an excellent main sequence random dispersion pattern. There were problems, of course; the delta curve was absurdly elliptic, and the UYPs (universal Y points) were falciform rather than trapezoidal. But

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you had to expect that on a Type 3B planet; under normal circumstances, it would never cause him any trouble.

Taken all in all, it was a body-environment-culture-role cluster with which he could empathize and identify.

"Feels pretty good," Marvin summed up for himself. "If only that damned nose ring doesn't blow up."

He got up and took stock of his surroundings. The first thing he saw was a note which Marduk Kras had left for him, tied to his wrist so he wouldn't overlook it.

Dear Swapper,

Welcome to Celsus! I realize that you may not feel very welcome, under the circumstances, and I regret it nearly as much as you do. But I would advise you sincerely to put all thought of sudden demise out of your mind, and concentrate instead on having a pleasant vacation. It may console you to know that the statistical incidence of death by black gift is no greater than that of being killed in a plutonium mine accident, if you happened to be a plutonium miner. So relax and enjoy yourself.

My apartment and all that is in it are yours to enjoy. My body also, though I trust you will not overstrain it or keep it out too late or feed it an excess of intoxicating beverages. It has a weak left wrist, so be careful if you should have to lift any heavy weights. Good luck, and try not to worry, since anxiety never yet solved a problem.

P.S. I know you are a gentleman and would not try to remove the nose ring. But I thought I should tell you that you can't anyhow because it is locked in place with a microscopic Jayverg Bonded Molecular Padlock. Good-by again, and do try to put all this unpleasantness out of mind and enjoy your two weeks on our lovely planet.

Your Sincere Friend,
Marduk Kras

At first Marvin was irritated by the note. But then he laughed and crumpled it up. Marduk was undoubtedly a scoundrel, but he was a likeable one, and not ungenerous. Marvin decided to make the best of his dubious bargain, forget about the putative bomb nestling just above his lip, and enjoy his time on Celsus.

He went on an exploration of his new home, and was well satisfied with what he found. It was

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a bachelor burrow, designed for residence rather than for reproduction. Its main construction feature—pentabrachiation — reflected Kras's status as a public official. Less fortunate sorts had to get by with three or four gallery systems; and in the slums of North Bogger, whole families were crowded into wretched mono and duobrachiate systems. Housing reform had been promised in the near future, however.

The kitchen was neat and modern, and well stocked with gourmet items. There were jars of candied annelids, and a bowl of exotic Alcyonium Salad mixture, and delicious tidbits of Tubipora, Pennatula, Gorgonia and Renilla. There was a can of Goose Barnacle in rotifer and orchid sauce, and a quick-frozen package of sweet and sour Uce. But—how like a bachelor — there were no staples, not even a gastropod loaf or a bottle of carbonated Ginger Honey.

Wandering down the long, curving galleries, Marvin found the music room. Marduk had not stinted here. A gigantic Imperial amplifier dominated the room, flanked by two Tyrant-model speakers. Marduk used a Whirlpool semi-mix microphone, with a forty bbc. channel rejection, an "expanding" type sense- discrimination selector, with a floating throat-slot "passive" director. Pickup was by image regeneration, but there was provision for changing over to decay modulation. Although not professional in quality, it was a very good amateur rig.

The heart of the system, of course, was the Insectarium. This particular one was an Ingenuator, the Super-Max model, with both automatic and manual selection and mixture controls, regulated feed and disposal, and various maximizing and minimizing features.

Marvin selected a grasshopper gavotte (Korestal, 431B) and listened to the thrilling tracheal obligatto and the subtle brass accompaniment of the paired Malphigian tubules. Although Marvin's appreciation was casual, he was well aware of the virtuoso ability of this particular performer: a Blue-Striped Grasshopper, his second thoracic segment pulsating slightly, visible in his own compartment of the Insectarium.

Leaning down, Marvin nodded in appreciation. The Blue-Striped Grasshopper c l i c k e d mandibles, then turned back to his music. (He had been bred especially for treble and brilliance; a flashy performer, more showy than sound. But Marvin did not know this.)

Marvin turned off the selection, flipped the status switch

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from Active to Dormant mode; the grasshopper went back to sleep. The Insectarium was well stocked, especially with Mayfly symphonies and the strange new cutworm songs, but Marvin had too much to explore to bother with music just now.

In the living room, Marvin lowered himself into a stately old clay bank (a genuine Wormstetter), rested his head against the wellworn granite headrest, and tried to relax. But the ring in his snout ticked away, a continual intrusion to his sense of well-being. He reached down and picked at random a quick-stick from a pile on a low table. He ran his antennae over the grooves, but it was no use. He couldn't concentrate on light fiction. Impatiently he threw the quick-stick aside and tried to make some plans.

But he was in the grip of an implacable dynamism. He had to assume that the moments of his life were severely limited, and those moments were passing away. He wanted to do something to commemorate his final hours. But what was there he could do?

He slid out of the Wormstetter and paced the main gallery, his claws clicking irritably. Then, coming to an abrupt decision, he went to the wardrobe room. Here he selected a new casing of gold-bronze chitin, and arranged it carefully over his shoulders. He plastered his facial bristles with perfumed glue, and arranged them *en brosse* over his cheeks. He applied a mild stiffener to his antennae, pointed them at a jaunty sixty degrees, and allowed them to droop in their attractive natural curve. Lastly, he dusted his mid-section with Lavender Sand, and outlined his shoulder joints with lampblack.

Surveying himself in the mirror, he decided that the effect was not unpleasing. He was well-dressed, but not dandified. Judging as objectively as he could, he decided that he was a presentable, rather scholarly looking young fellow. Not a Squig Star by any means, but definitely not a drunfiler.

He left his burrow by the main entrance, and replaced the entrance plug.

It was dusk. Stars glittered overhead; they seemed no more numerous than the myriad lights in the entrances of the countless burrows, both commercial and private, which made up the pulsating heart of the city. The sight thrilled Marvin. Surely, surely, somewhere in the endless intertwining corridors of the great city, there would be that for him which would bring pleasure. Or, at least, a soft and forgetful surcease.

Thus, Marvin walked dolorously, yet with a tremulous hopeful-

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ness, toward the hectic and beckoning Main Groove of the City, there to find what chance held out for him or fate decreed.

XV

With a long rolling stride and a creaking of leather boots, Marvin Flynn strode down the wooden sidewalk. Faintly there came to him the mingled odors of sagebrush and chapparal. On either side of him the adobe walls of the town glittered under the moon like dull Mexican silver. From a nearby saloon there came the strident tones of a banjo—

Frowning deeply, Marvin stopped in midstride. Sagebrush? Saloons? What was going on around here?

"Something wrong, stranger?" a harsh voice intoned.

Flynn whirled. A figure stepped out of the shadows near the General Store. It was a saddlebum, a sniffling, slump-shouldered loafer with a dusty black hat crushed comically on his begrimed forehead.

"Yes, something is very wrong," Marvin said. "Everything seems — strange."

" 'Tain't nothing to be alarmed about," the saddlebum reassured him. "You have merely changed your system of metaphoric reference, and the lord knows there's no crime in that. As a matter of fact, you should be happy to give up those dreary animal-insect comparisons."

"There was nothing wrong with my comparisons," Marvin said. "After all, I am on Celsus V, and I *do* live in a burrow."

"So what?" the saddlebum said. "Haven't you any imagination?"

"I've got plenty of imagination!" Marvin said indignantly. "But that's hardly the point. I simply mean that it is inconsistent to think like a cowboy on Earth when one is actually a sort of mole-like creature on Celsus."

"It can't be helped," the saddlebum said. "What's happened is, you've overloaded your analogizing faculty, thereby blowing a fuse. Accordingly, your perceptions have taken up the task of experimental normalization. This state is known as metaphoric deformation."

Now Marvin remembered the warning he had received from Mr. Blanders concerning this phenomenon. Metaphoric deformation, that disease of the interstellar traveler, had struck him suddenly and without warning.

He knew that he should be alarmed but instead felt only a mild surprise. His emotions were consistent with his perceptions, since a change unperceived is a change unfelt.

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"When," Marvin asked, "will I start to see things as they really are?"

"That last is a question for a philosopher," the saddlebum told him. "But speaking in a limited fashion, this particular syndrome will pass if you ever get back to Earth. But if you continue travelling the process of perceptual analogizing will increase; though occasional short-lived remissions into your primary situation-perception-context may be expected."

Marvin found that interesting, but unalarming. He hitched up his jeans and said, "Waal, reckon a man's gotta play out the hand that's dealt to him and I ain't about to stand here all night jawing about it. Just who are you, stranger?"

"I," said the saddlebum, with a certain smugness, "am he without whom your dialogue would be impossible. I am Necessity personified; without me, you would have had to remember the Theory of Metaphoric Deformation all by yourself, and I doubt that you are capable of it. You may cross my palm with silver."

"That's for gypsies," Marvin said scornfully.

"Sorry," the saddlebum said, without the least show of embarrassment. "Got a tailor-made?"

"Got the makings," Marvin said, flipping him a sack of Bull Durham. He contemplated his new companion for a moment, then said, "Waal, yore a mangy looking critter, and it seems to me more half jackass and half prairie dog. But I reckon I'm stuck with you no matter who you are."

"Bravo," the saddlebum said gravely. "You conquer change of context with that same sureness with which an ape conquers a banana."

"Reckon that's a tetch high-falutin," Marvin said equably. "What's the next move, perfesser?"

"We shall proceed," the saddlebum said, "To yonder saloon of evil repute."

"Yippee," Marvin said, and strode leanhipped through the batwinged saloon doors.

Within the saloon, a female attached herself to Marvin's arm. She looked up at him with a smile of vermillion bas-relief. Her unfocused eyes were pencilled in imitation of gaiety; her flaccid face was painted with the lying hieroglyphics of animation.

"Co'mon upstairs with me, kid," grisly beldame cried "Lotsa fun, lotsa laughs!"

"It is droll to realize," the saddlebum said, "that Custom has decreed this lady's mask, proclaiming that those who sell pleasure must portray enjoyment. It is a hard demand, my

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friends, and not imposed upon any other occupation. For note: the fish wife is allowed to hate herring, the vegetable man may be allergic to turnips, and even the newspaper boy is permitted his illiteracy. Not even the blessed saints are required to enjoy their holy martyrdoms. Only the humble sellers of pleasure are required, like Tantalus, to be forever expectant of an untouchable feast."

"Yer friend's a great little kidder, ain't he?" the termagent said. "But I like you best, baby, 'cause you make me go all mush inside."

From the virago's neck there hung a pendant upon which was strung in miniature a skull, a piano, an arrow, a baby's shoe, and a yellowed tooth.

"What—are—those?" Marvin asked.

"Symbols," she said.

"Of what?"

"Come on upstairs and I'll show you, sweety."

"And thus," the saddlebum intoned, "we perceive the true unmediated confrontation of the aroused feminine nature, 'gainst which our masculine fancies seem mere baby's toys."

"C'mon!" the harpy cried, wriggling her gross body in a counterfeit of passion all the more frightening because it was real. "Upstairs to bed!" she shouted, pressing against Marvin with a breast the size and consistency of an empty Mongolian saddlebag. "I'll really show ya somepin!" she cried, entwining his thews with a heavy white leg, grimy and heavily varicosed. "When ya git loved *by* me," she howled, "you'll damned well know you been loved!" And she ground lasciviously against him with her pudenda, which was as heavily armored as the forehead of a Tyrannosaurus.

"Well'er, thank you so terribly much anyhow," Marvin said, "but I don't think just at the moment I —"

"You don't want no *lovin*?" the woman asked incredulously.

"Well, actually, I can't really say that I do."

The woman planted knobkerry fists on tom-tom hips and said, "That I should live to see this day!" But then she softened, and said, "Turn not away from Venus's sweet perfumed home of pleasure! Thou must strive, sir, to overcome this most unseemly gesture of unmanliness. Come, my lord! The bugle sounds! Mount and fiercely press thy charge!"

"Oh, I rather think not," Marvin said, laughing hollowly.

She seized him by the throat with a hand the size and shape of a Chilean poncho. "You'll do it

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now, you lousy cowardly inward-directed goddam narcissist bastard, and you'll do it good and proper, or by Ares I'll snap your scrawny windpipe like a Michaelmas chicken!"

A tragedy seemed in the making, for the woman's passion rendered her incapable of a judicious modification of her demands.

Luckily the saddlebum, following the dictates of his wit if not his predilection, snatched a fan out of his gun belt, leaned forward simpering, and tapped the enraged woman on her rhinocerine upper arm.

"Don't you *dare* hurt him!" the saddlebum said, his voice a squeaky contralto.

Marvin, quick if not apt, rejoindered, "Yes, tell her to stop *pawing* me! I mean to say it is simply too much, one cannot even stroll out of one's house in the evening without encountering some *disgraceful* incident —"

"Don't cry, for God's sake, don't cry!" the saddlebum said. "You know I can't stand it when you cry!"

"I am *not* crying!" Marvin said, snuffling. "It is just that she has ruined this shirt. Your present!"

"I'll get you another!" the saddlebum said. "But I cannot abide another *scene*!"

The woman was staring at them slack-jawed, and Marvin was able to utilize her moment of inattention by taking a pry bar out of his tool kit, setting it under her swollen red fingers, and prying himself free of her grip. Seizing the dwindling moment of opportunity, Marvin and the saddlebum sprinted out the door, leaped around the corner, broad-jumped across the street, and pole-vaulted to freedom.

Once clear of the immediate danger, Marvin came abruptly to his senses. The scales of metaphoric deformation fell away for the moment, and he experienced a perceptual experiential remission. It was all too painfully apparent now that the 'saddlebum' was actually a large parasite beetle of the species *S. Cthulu.* There would be no mistake about this, since the Cthulu beetle is characterized by a secondary salivary duct located just below and slightly to the left of the subesophegal ganglion.

These beetles feed upon borrowed emotions, their own having long ago atrophied. Typically, they lurk in dark and shadowy places, waiting for a careless Celsian to pass within range of their segmented maxilla. That is what happened to Marvin.

Realizing this, Marvin directed at the beetle an emotion of anger so powerful that the Cthulu, vic-

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tim of its own hyperacute emotional receptors, fell over unconscious in the road. That done, Marvin readjusted his gold-bronze casing, stiffened his antennae, and continued down the road.

XVI

He came to a bridge that crossed a great flowing river of sand. Standing on the center span, he gazed downward into the black depths which rolled inexorably onward to the mysterious sand sea. Half-hypnotized he gazed, the nose ring beating its quick tattoo of mortality three times faster than the beat of his hearts. And he thought:

Bridges are receptacles of opposed ideas. Their horizontal distance speaks to us of our transcendence; their vertical declivity reminds us unalterably of the imminence of failure, the sureness of death. We push outward across obstacles, but the primordial fall is forever beneath our feet. We build, construct, fabricate; but death is the supreme architect, who shapes heights only that there may be depths.

O Celsians, throw your well-wrought bridges across a thousand rivers, and tie together the disparate contours of the planet. Your mastery is for naught, for the land is still beneath you, still waiting, still patient. Celsians, you have a road to follow, but it leads assuredly to death. Celsians, despite your cunning, you have one lesson still to learn. The heart is fashioned to receive the spear. All other effects are extraneous.

These were Marvin's thoughts as he stood on the bridge. And a great longing overcame him, a desire to be finished with desire, to forego pleasure and pain, to quit the petty modes of achievement and failure, to have done with distractions, and get on with the business of life, which was death.

Slowly he climbed to the rail, and there stood poised over the twisting currents of sand. Then, out of the corner of his eye, he saw a shadow detach itself from a pillar, move tentatively to the rail, stand erect, poise itself over the abyss and lean precariously outward —

"Stop! Wait!" Marvin cried. His own desire for destruction had been abruptly terminated. He saw only a fellow-creature in peril.

The shadowy figure gasped, and abruptly lunged toward the yawning river below. Marvin moved simultaneously, and managed to catch an ankle.

The ensuing wrench almost pulled him over the rail. But recovering quickly, Marvin attach-

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ed suckers to the porous stone sidewalk, spread his lower limbs for maximum purchase, wrapped two upper limbs around a light pole, and maintained a tenacious grip with his remaining two arms.

There was a moment of charged equilibrium; then Marvin's strength prevailed over the weight of the would-be suicide. Slowly, carefully, Marvin pulled, shifting his grip from tarsus to tibia, hauling without respite until he had brought that person to a point of safety on the roadbed of the bridge.

All recollection of his own self-destructive desires had left him. He strode forward and grasped the suicider by the shoulders, shaking fiercely.

"You damned fool!" Marvin shouted. "What kind of a coward are you? Only an idiot or a madman takes an out like that. Haven't you any guts at all, you damned — "

He stopped in mid-expletive. The would-be suicide was facing him, trembling, eyes averted. And now Marvin perceived, for the first time, that he had rescued a woman.

XVII

Later, in a private booth in a bridgeside restaurant, Marvin apologized for his harsh words, which had been torn from him by shock rather than conviction. But the woman, gracefully clicking her claw, refused to accept his apology.

"Because you are right," she said. "My attempt was the act of an idiot or a madwoman, or both. Your analysis was correct, I fear. You should have let me jump."

Marvin perceived how fair she was. A small woman, coming barely to his upper thorax, she was exquisitely made. Her midbody had the true sweet cylinder curves, and her proud head sat slightly forward of her body at a heart-wrenching five degrees from the vertical. Her features were perfection from the nicely bulged forehead to the angular sweep of jaw. Her twin ovipositors were modestly hidden behind a white satin sash, cut in princess style and revealing just a tantalizing suggestion of the shining green flesh beneath them. Her legs, all of them, were clad in orange windings, draped to reveal the lissome segmentation of the joints.

A would-be suicide she may have been; but she was also the most stunning beauty that Marvin had seen on Celsus.

His throat went dry at the sight of her, and his pulse began to race. He found that he was staring at the white satin that concealed and revealed her high-tilted ovipositors. He turned

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away, and found that he was looking at the sensual marvel of a long, segmented limb. Blushing furiously, he forced himself to look at the puckered beauty-scar on her forehead.

She seemed unconscious of his fervent attention. Unselfconsciously she said, "Perhaps we should introduce ourselves — under the circumstances!"

They both laughed immoderately at her witticism. "My name is Marvin Flynn," Marvin said.

"Mine is Phthistia Held," the young woman said.

"I'll call you Cathy, if you don't mind," Marvin said.

They both laughed again: Then Cathy grew serious. Taking note of the too-quick passage of time, she said, "I must thank you again. And now I must leave."

"Of course," Marvin said, rising. "When may I see you again?"

"Never," she said in a low voice.

"But I must!" Marvin said. "I mean to say, now that I've found you I can never let you go."

She shook her head sadly. "Once in a while," she murmured, "will you give one little thought to me?"

"We must not say good-by!" Marvin said.

"Oh, you'll get by," she replied, not cruelly.

"I'll never smile again," Marvin told her.

"Somebody else will be taking my place," she predicted.

"You are temptation!" he shouted in a fury.

"We are like two ships that pass in the night," she corrected.

"Will we never meet again?" Marvin queried.

"Time alone can tell."

"My prayer is to be there with you," Marvin said hopefully.

"East of the Sun and West of the Moon," she intoned.

"You're mean to me," Marvin pouted.

"I didn't know what time it was," she said. "But I know what time it is now!" And so saying, she whirled and darted out the door.

Marvin watched her leave, then sat down at the bar. "One for my baby, and one for the road," he told the bartender.

"A woman's a two-face," the bartender commented sympathetically, pouring a drink.

"I got the mad-about-her-sad-without-her blues," Marvin replied.

"A fellow needs a girl," the bartender told him.

Marvin finished his drink and held out his glass. "A pink cocktail for a blue lady," he ordered.

"She may be weary," the bartender suggested.

"I don't know why I love her

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like I do," Marvin stated. "But at least I do know why there's no sun up in the sky. In my solitude she haunts me like a tinkling piano in the next apartment. But I'll be around no matter how she treats me now. Maybe it was just one of those things; yet I'll remember April and her, and the evening breeze caressed the trees but not for me, and —"

There is no telling how long Marvin might have continued his lament had not a voice at the level of his ribs and two feet to his left whispered, "Hey, Meester."

Marvin turned and saw a small, plump, raggedly dressed Celsian sitting on the next bar stool.

"What is it?" Marvin asked brusquely.

"You maybe want see thees muchacha so beautiful other time?"

"Yes, I do. But what can you —"

"I am private investigator tracer of lost persons satisfaction guaranteed or not one cent in tribute."

"What kind of an accent have you got?" Marvin asked.

"Lambrobian," the investigator said. "My name is Juan Valdez and I come from the fiesta lands below the border to make my fortune here in big city of the Norte."

"Sandback," the bartender snarled.

"What thees theeng you call me?" the little Lombrobian said, with suspicious mildness.

"I called you a sandback, you lousy little sandback," the bartender snarled.

"That ees what I thought," said Valdez. He reached into his cummerbund, took out a long, double-edged knife and drove it into the bartender's heart, killing him instantly.

"I am a mild man, senor," he said to Marvin. "I am not a man quickly to take offense. Indeed, in my home village of Montana Verde de los tres Picos, I am considered a harmless man. I ask nothing more than to be allowed to cultivate my peyote buds in the high mountains of Lombrobia under the shade of that tree which we call 'the sun hat,' for these are the bes' peyote buds in all the world."

"I can understand that."

"Yet still," Valdez said, more sternly, "when an exploitator del norte insults me, and by implication, defames those who gave me birth and nurtured me — why then, senor, a blinding red mist descends over my field of vision and my knife springs to my hand unaided, and proceeds from there non-stop to the heart of the betrayer of the children of the poor."

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"It could happen to anyone," Marvin said.

"And yet," Valdez said, "despite my keen sense of honor, I am essentially childlike, intuitive and easy-going."

"I had noticed that, as a matter of fact," Marvin said.

"But enough of that. Now, you wish hire me investigation find girl? But of course. El buen pano en el area se vende, verdad?"

"Si, hombre;" Marvin replied, laughing. "Y el deseo vence al miedo!"

"Pues, adelante!" And arm in arm the two comrades marched out into the night of a thousand brilliant stars like the lance-points of a mighty host.

XVIII

Once outside the restaurant, Valdez turned his mustached brown face to the heavens and located the constellation Invidius, which, in northern latitudes, points unerringly to the north-northeast. With this as a base line, he established cross references, using the wind on his cheek (blowing west at five miles per hour), and the moss on the trees (growing on the northerly sides of decidupis trunks at one millimeter per diem). He allowed for a westerly error of one foot per mile (drift), and a southerly error of five inches per hundred yards (combined tropism effects). Then, with all factors accounted for, he began walking in a south-southwesterly direction.

Marvin followed. Within an hour they had left the city, and were proceeding through a stubbled farming district. Another hour put them beyond the last signs of civilization, in a wilderness of tumbled granite and greasy feldspar.

Valdez showed no signs of stopping, and Marvin began to feel vague stirrings of doubt.

"Just where, exactly, are we going?" he asked at last.

"To find your Cathy," Valdez replied, his teeth flashing white in his good-humored burnt sienna face.

"Does she really live this far from the city?"

"I have no idea where she lives," Valdez replied, shrugging.

"You don't?"

"No, I don't."

Marvin stopped abruptly. "But you said that you did know!"

"I never said or implied that," Valdez said, his umber forehead wrinkling. "I said that I would help you find her."

"But if you don't know where she lives—"

"It is quite unimportant," Valdez said, holding up a stern musteline forefinger. "Our quest has nothing to do with finding where Cathy *lives;* our quest,

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pure and simple, is to find *Cathy*. That, at least, was my understanding."

"Yes, of course," Marvin said. "But if we're not going to where she lives, then where are we going?"

"To where she weel be," Valdez replied serenely.

"Oh," Marvin said.

They walked on through towering mineral marvels, coming at last into scrubby foothills that lay like tired walruses around the gleaming blue whale of a lofty mountain range. Another hour passed, and Marvin again grew disquieted. But this time he expressed his anxiety in a roundabout fashion, hoping by guile to gain insight.

"Have you known Cathy long?" he asked.

"I have never had the good fortune to meet her," Valdez replied.

"Then you saw her for the first time in the restaurant with me?"

"Unfortunately I did not even see her there, since I was in the men's room passing a kidney stone during the time of your conversation with her. I may have caught a glimpse of her as she turned from you and departed; but more likely I saw only the doppler effect produced by the swinging red door."

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"Then you know nothing whatsoever about Cathy?"

"Only the little I have heard from you; which, frankly, amounts to practically nothing."

"Then how," Marvin asked, "can you possibly take me to where she will be?"

"It is simple enough," Valdez said. "A moment's reflection should clear the matter for you."

Marvin reflected for several moments, but the matter stayed refractory.

"Consider it logically," Valdez said. "What is my problem? *To find Cathy*. What do I know about Cathy? Nothing."

"That doesn't sound so good."

"But it is only half the problem. Granted that I know nothing about Cathy; what do I know about *Finding?*"

"What?" Marvin asked.

"It happens that I know everything about Finding," Valdez said triumphantly, gesturing with his graceful terra cotta hands. "For I am an expert in the Theory of Searches!"

"The what?" Marvin asked.

"The Theory of Searches!" Valdez said, a little less triumphantly.

"I see," Marvin said, unimpressed. "Well, that's great. I'm sure it's a very good theory. But if you don't know anything about Cathy, I don't see how any theory will help."

Valdez sighed, not unpleasantly, and touched his mustache with a puce-colored hand. "My friend, if you knew all about Cathy—her habits, friends, desires, dislikes, hopes, fears, dreams, intentions, and the like—do you think you would be able to find her?"

"I'm sure I could," Marvin said.

"Even without knowing the Theory of Searches?"

"Yes."

"Well then," Valdez said, "apply that same reasoning to the reverse condition. I know all there is to know about the Theory of Searches. Therefore I need to know nothing about Cathy."

They marched steadily upward, across the steepening face of a mountain slope. A bitter wind screamed and buffeted at them, and patches of hoarfrost began to appear underfoot on the path.

Valdez talked about his researches into the Theory of Searches, citing the following typical cases: Hector looking for Lysander, Adam questing after Eve, Galahad reconnoitering for the Holy Grail, Fred C. Dobb's seeking the Treasure of the Sierra Madre, Edwin Arlington Robinson's perquisitions for colloquial self-expression in a typi-

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cally American milieu, Gordon Sly's investigations of Naiad McCarthy, energy's pursuit of entropy, God's hunt for man and yang's perusal of yin.

"From these specifics," Valdez said, "we derive the general notion of Search, and its most important corollaries."

Marvin was too miserable to answer. It had suddenly occurred to him that one could die in this chill and waterless wasteland.

"Amusingly enough," Valdez said, "the Theory of Searches forces upon us the immediate conclusion that nothing can be truly (or ideally) lost. Consider: for a thing to be *lost,* it would require *a place to be lost in.* But no such place can be found, since simple multiplicity carries no implications of qualitative differentiation. In Search terms, every place is like every other place. Therefore, we replace the concept *Lost,* with the concept of *indeterminate placement;* which, of course, is susceptible to logico-mathematical analysis."

"But if Cathy isn't really lost," Marvin said, "then we can't really find her."

"That statement is true, as far as it goes," Valdez said. "But of course, it is merely Ideal notion, and of little value in this instance. For operational purposes we must modify the Theory of Searches. In fact, we must reverse the major premise of the theory and re-accept the original concepts of Lost and Found."

"It sounds very complicated."

"Well, it's simple enough, once you understand the theory," Valdez said. "Now, to ensure our success, we must decide upon the optimum form of Search. Obviously, if both of you are actively questing, your chances of finding each other are considerably lessened. Consider two people seeking one another up and down the endless crowded aisles of a great department store; and contrast that with the improved strategy of one seeking, and the other standing at a fixed position and waiting to be found. The mathematics are a little intricate, so you will just have to take my word for it. The best chance of you/her finding her/you will be for one to search, and the other to allow himself/herself to be searched for. Our deepest folk wisdom has always known this, of course."

"So what do we do?"

"I have just told you!" Valdez cried. "One must search, the other must wait. Since we have no control over Cathy's actions, we assume that she is following her instincts and looking for you. Therefore you must fight down your instincts and wait, thereby allowing her to find you."

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"All I do is wait?" Marvin asked.

"That's right."

"And you really think she'll find me?"

"I would stake my life on it."

"Well . . . All right. But in that case, where are we going now?"

"To a place where you will wait. Technically, it is called a Location-Point."

Marvin looked confused, so Valdez explained further. "Mathematically, all places are of equal potentiality insofar as the chances of her finding you are concerned. Therefore we are able to choose an arbitrary Location-Point."

"What Location-Point have you chosen," Marvin asked.

"Since it made no real difference," Flynn said, "I selected the village of Montana Verde de los tres Picos, in Adelante Province, in the country of Lombrobia."

"That's your home town, isn't it?" Marvin asked.

"As a matter of fact, it is," Valdez said, mildly surprised and amused. "That, I suppose, is why it came so quickly to my mind."

"Isn't Lombrobia a long way off?"

"A considerable distance," Valdez admitted. "But our time will not be wasted, since I will teach you logic, and also the folksongs of my country."

"It isn't fair."

"My friend," Valdez told him, "when you accept help, you must be prepared to take what one is capable of giving, not what you would like to receive. I have never denied my human limitations; but it is ungrateful of you to refer to them."

Marvin had to be content with that, since he didn't think he could find his way back to the city unaided. So they marched on through the mountains, and they sang many folksongs.

XIX

Onward they marched, up the polished mirror face of a vast mountain. The wind whistled and screamed, tore at their clothing and tugged at their straining fingers. Treacherous honeycomb ice crumbled under their feet as they struggled for footholds, their buffeted bodies plastered to the icy mountain wall and moving leech-like up its dazzling surface.

Valdez bore up through it all with a saint-like equanimity. "Eet ees deefecult," he grinned. "And yet—for the love which you bear for thees woman—eet ees all worthwhile, si?"

"Yeah, sure," Marvin mumbled. "I guess it is." But in truth, he was beginning to doubt it. After all, he had only known Cathy for less than an hour.

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An avalanche thundered past them, and tons of white death screamed past—inches from their strained and clinging bodies. Valdez smiled with serenity.

"Beyond all obstacles," Valdez intoned, "lies that summit of accomplishment which is the face and form of the beloved."

"Yeah, sure," Marvin said.

Spears of ice, shaken loose from a high dokalma, whirled and flashed around them. Marvin thought about Cathy, and found that he was unable to remember what she looked like. It struck him that love at first sight was overrated.

A high precipice loomed before them. Marvin looked at it, and at the shimmering ice fields beyond, and came to the conclusion that the game was really not worth the candle.

"I think," Marvin said, "that we should turn back."

Valdez smiled subtly, pausing on the very edge of the vertiginous descent into that wintry hell of suicidally shaped snow slides.

"My frien'," he said, "I know why you say this."

"You do?" Marvin asked.

"Of course. It is obvious that you do not wish me to risk my life on the continuance of your insensate and magnificent quest. And it is equally obvious that you intend to plunge on alone."

"It is?" Marvin asked.

"Certainly. It would be apparent to the most casual observer that you are driven to seek your love through any and all dangers, by virtue of the unyielding nature of your personality. And it is equally clear that your generous and high-spirited mentality would be disturbed at the idea of involving one whom you consider a close friend and bosom companion in so perilous a venture."

"Well," Marvin began, "I'm not sure—"

"But I am sure," Valdez said quietly. "And I reply to your unspoken question as follows: 'Friendship bears this similarity to love: it transcends all limits.'"

"Well, that's very nice of you," Marvin said, eyeing the precipice ahead. "But I really didn't know Cathy very well, and I don't know how well suited we would be. So all in all, maybe it would be best if we got out of here."

"Your words lack conviction, my young friend," Valdez laughed. "I beg of you not to worry about my safety."

"As a matter of fact," Marvin said, "I was worrying about *my* safety."

"No use!" Valdez cried gaily. "Hot passion betrays the studied coolness of your words. Forward, my friend!"

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Valdez seemed determined to force him to Cathy's side whether he wanted to go or not. The only solution seemed to be a quick blow to the jaw, after which he would drag Valdez and himself back to civilization. He edged forward.

Valdez edged back. "Ah no, my friend!" he cried. "Again, overweening love has rendered your motives transparent. To knock me out, is it not? Then, after making sure I was safe and comfortable and well-provisioned, you would plunge alone into the white wilderness. But I refuse to comply. We go on together, compadre!"

And, shouldering all their provisions, Valdez began his descent of the precipice. Marvin could do nothing but follow.

We shall not bore the reader with an account of that great march across the Moorescu Mountains, nor with the agonies suffered by the love-dazzled young Flynn and his steadfast companion. Nor shall we delineate the strange hallucinations which beset the travellers, nor the temporary state of insanity which Valdez suffered when he thought he was a bird and able to fly across thousand-foot drops. Nor would any but the scholarly be interested in the psychological process by which Marvin was moved, through a contemplation of his own sacrifices, to a fondness for the young lady in question, and then to a *strong* fondness, and then to a sensation of love, and then to an overweening passion of love.

Suffice it to say that all of these things happened, and that the journey across the mountains occupied many days and brought about many emotions. And at last it came to an end.

Arriving at a last mountain crest, Marvin looked down and saw, instead of ice fields, green pastures and rolling forests under a summer sun, and a little village nestled in the crook of a genie river.

"Is—is that—" Marvin began.

"Yes, my son," Valdez said quietly. "that is the village of Montana de los tres Picos, in Adelante Province, in the country of Lombrobia, in the valley of the Blue Moon."

Marvin thanked his old guru—for no other name was applicable to the role which the devious and saintly Valdez had played—and began his descent to the Location Point where his wait for Cathy would begin.

XX

Montana de los tres Picos! Here, surrounded by crystal lakes and high mountains, a

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simple, good-hearted peasantry engage in unhurried labor beneath the swan-necked palms. At midday and midnight one may hear the plaintive notes of a guitar echo down the crenellated walls of the old castle. Nut-brown maidens tend the dusty grape vines while a mustached caique watches, his whip curled sleepily on his hairy wrist.

To this quaint memento of a bygone age came Flynn, led by the faithful Valdez.

Just outside the village, on a gentle rise of land, there was an inn, or posada. To this place Valdez directed them.

"But is this really the best place to wait?" Marvin asked.

"No, it is not," Valdez said, with a knowing smile. "But by chosing it instead of the dusty town square, we avoid the fallacy of the 'optimum'. Also, it is more comfortable here."

Marvin bowed to the mustached man's superior wisdom and made himself at home in the posada. He settled himself at an outdoor table which commanded a good view of the courtyard and of the road beyond it. He fortified himself with a flagon of wine, and proceeded to fulfill his theoretical function as called for by the Theory of Searches: viz, he Waited.

Within the hour, Marvin beheld a tiny dark figure moving slowly along the gleaming white expanse of the road. Closer it came, the figure of a man no longer young, his back bent beneath the weight of a heavy cylindrical object. At last the man raised his haggard head and stared directly into Marvin' eyes.

"Uncle Max!" Marvin cried.

"Why, hello, Marvin," Uncle Max replied. "Would you mind pouring me a glass of wine? This is a very dusty road."

Marvin poured the glass of wine, scarcely believing the testimony of his senses; for Uncle Max had unaccountably disappeared some ten years ago. He had last been seen playing golf at the Fairhaven Country Club.

"What happened to you?" Marvin asked.

"I stumbled into a time warp on the twelfth hole," Uncle Max said. "If you ever get back to Earth, Marvin, you might speak to the club manager about it. I have never been a *complainer;* but it seems to me that the greens committee ought to know about this, and possibly build a small fence or other enclosing structure. I do not care so much for myself, but it might cause a nasty scandal if a child fell in."

"I'll certainly tell them," Marvin said. "But Uncle Max, where are you going now?"

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"I have an appointment in Samarra," Uncle Max said. "Thank you for the wine, my boy, and take good care of yourself. By the way; did you know that your nose is ticking?"

"Yes," Marvin said. "It's a bomb."

"I suppose you know what you're doing," Max said. "Goodby, Marvin."

And Uncle Max trudged away down the road, his golf bag swinging from his back and a number 2 iron in his hand as a walking stick. Marvin settled back to wait.

Half an hour later, Marvin spied the figure of a woman hurrying down the road. He felt a rising sensation of anticipation, but then slumped back in his chair. It was not Cathy after all. It was only his mother.

"You're a long way from home, Mom," he said quietly.

"I know, Marvin," his mother said. "But you see, I was captured by white slavers."

"Gosh, Mom! How did it happen?"

"Well, Marvin," his mother said. "I was simply taking a Christmas basket to a poor family in Cutpurse Lane, and there was a police raid, and various other things happened, and I was drugged and awoke in Buenos Aires in a luxurious room with a man standing near me and leering and asking me in broken English if I *wanted a little fun.* And when I said no, he bent down and clasped me in his arms in an embrace that was plainly designed to be lecherous."

"Gosh! What happened then?"

"Well," his mother said, "I was lucky enough to remember a little trick that Mrs. Jasperson had told me. Did you know that you can kill a man by striking him forcibly under the nose? I didn't like to do it, Marvin, although it seemed a good idea at the time. And so I found myself in the streets of Buenos Aires and one thing led to another and here I am."

"Won't you have some wine?" Marvin asked.

"That's very thoughtful of you," his mother said, "but I really must be on my way."

"Where?"

"To Havana," his mother said. "I have a message for Garcia. Marvin, have you a cold?"

"No, I probably sound funny because of this bomb in my nose."

"Take care of yourself, Marvin," his mother said, and hurried on.

Time passed. Marvin ate his dinner on the portico, washed it down with a flagon of Sangre de Hombre, '36, and settled back in the deep shadow cast by the

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whitewashed palladium. The sun stretched its golden bottom toward the mountain peaks. Down the road, the figure of a man could be seen hurrying past the inn . . .

"Father!" Marvin cried.

"Good afternoon, Marvin," his father said, startled but hiding it well. "I must say, you turn up in some unexpected places."

"I could say the same for you," Marvin said.

His father frowned, adjusted his necktie and changed his briefcase to the other hand. "There is nothing strange about me being here," he told his son. "Usually your mother drives me home from the station. But today she was delayed, and so I walked. Since I was walking, I decided to take the shortcut which goes over one side of the golf course."

"I see," Marvin said.

"I will admit," his father continued, "that this shortcut seems to have become a 'long' cut, as one might express it, for I estimate that I have been walking through this countryside for the better part of an hour, if no longer."

"Dad," Marvin said, "I don't know how to tell you this, but the fact is, you are no longer on Earth."

"I find nothing humorous about a remark like that," his father stated. "Doubtless I have gone out of my way; nor is the style of architecture what I would normally expect to find in New York State. But I am quite certain that if I continue along this road for another hundred yards or so, it will lead into Annandale Avenue, which in turn will take me to the intersection of Maple and Spruce Lane. From there, of course, I can easily find my way home."

"I suppose you're right," Marvin said. He had never been able to win an argument from his father.

"I must be getting along," his father said. "By the way, Marvin, were you aware that you have some sort of obstruction in your nose?"

"Yes, sir," Marvin said. "It's a bomb."

His father frowned deeply, pierced him with a glance, shook his head regretfully and marched on down the road.

"I don't understand it," Marvin remarked later to Valdez. "Why are all of these people finding me? It just doesn't seem natural."

"It isn't natural," Valdez assured him. "But it *is* inevitable, which is much more important."

"Maybe it is inevitable," Marvin said. "But it is also highly improbable."

"True," Valdez agreed. "Al-

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though we prefer to call that a forced-probability; which is to say, it is an indeterminate concomitant of the Theory of Searches."

"I'm afraid I don't fully understand that," Marvin said.

"Well, it's simple enough. The Theory of Searches is a pure theory; which is to say that on paper it works every time. But once we attempt to make practical applications, we encounter difficulties, the foremost of which is the phenomenon of indeterminacy. To put it in its simplest terms, what happens is this: the presence of the Theory interferes with the working of the Theory. You see, the Theory cannot take into account the effect of its own existence upon itself. Ideally, Theory of Searches exists in a universe—in—which—there—is—no Theory of Searches. But practically—which is our concern here—the Theory of Searches exists in a world in which there *is* a Theory of Searches, which has what we call a 'mirroring' or 'doubling' effect upon itself."

"Hmm," said Marvin.

"Of course," Valdez added; "we must consider lambda-chi — the symbolic representation of the inverse ratio of all possible searches to all possible finds. Thus, when lambda-chi is increased through indeterminacy or other factors, the possibility of search-failure is rapidly reduced to a figure near zero, while the possibility of search-success expands quickly toward one."

"Does that mean," Marvin asked, "that because of the effect of the Theory of Searches all searches will be successful?"

"Exactly," Valdez said. "You have expressed it beautifully, though perhaps with insufficient rigor. All possible searches will be successful during the time, or duration, of the Set-Expansion Factor."

"I understand now," Marvin said. "According to the theory, I must find Cathy."

"Yes," Valdez said. "You must find Cathy; as a matter of fact, you must find everyone. The only limitation is the Set-Expansion Factor, or S-E."

"Oh?" Marvin asked.

"Well, naturally, all searches can only be successful during the time, or duration, of S-E. But the duration of S-E is a variable which can last no less than 6.3 microseconds and no more than 1,005.34543 years."

"How long will S-E last in my particular case?" Marvin asked.

"A lot of us would like to know the answer to that one," Valdez said, with a hearty chuckle.

"I was afraid of that," Marvin said.

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"Science is a cruel taskmaster," Valdez agreed. Then he winked cheerfully and said, "But of course, even the cruelest taskmasters can be evaded."

"Do you mean to say there is a solution?" Marvin cried.

"Not a legitimate one, unfortunately," Valdez said.

"Still," Marvin said, "if it works, let's try it out."

"I would really rather not," Valdez said.

"I insist," Marvin said. "After all, I am the one who is Searching."

"That has nothing to do with it, mathematically speaking," Valdez said. "But I suppose you would give me no peace unless I indulged you."

Valdez sighed unhappily, schlepped a piece paper and a stub pencil out of his rebozo, and asked, "How many coins do you have in your pocket?"

Marvin looked and replied, "Eight."

Valdez wrote down the result, then asked for the date of Marvin's birth, his social security number, his shoe size, and height in centimeter. To this he gave a numerical value. He asked Marvin to pick a number at random between 1 and 14. With this, he added several figures of his own, then scribbled and calculated for several minutes.

"Well?" Marvin asked.

"Remember, this result is merely statistically probable," Valdez said, "and has no other grounds for credence."

Marvin nodded. Valdez said, "The Set-Expansion Factor, in your particular case, is due to expire in exactly one minute and forty-eight seconds, plus or minus five minimicroseconds." He consulted his watch and nodded in satisfaction.

Marvin was about to protest vehemently about the unfairness of this, and to ask why Valdez hadn't made that vital calculation earlier.

But then he looked down upon the road, now glowing a singular white against the rich blue of evening.

He saw a figure moving slowly toward the posada.

"Cathy!" Marvin cried. For it was she.

"Search completed with 43 minimicro seconds of the Set-Expansion Factor unelapsed," Valdez noted. "Another experimental validation for my Search Theory."

But Marvin did not hear him, for he had rushed down to the road, and there clasped the long-lost beloved in his arms. And Valdez, the wily old friend and taciturn companion of the Long March, smiled tightly to himself and ordered another bottle of wine.

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XXI

And so they were together at last; beautiful Cathy, star-crossed and planet haunted, drawn by the strange alchemy of the Location-Point; and Marvin, young and strong, with his swallow's flash smile in a tanned, good-humored face; Marvin, setting out with a young man's audacity and easy confidence to conquer the challenge of an old and intricate universe; and Cathy at his side, younger than he in years, yet vastly older in her woman's inherited store of intuitive wisdom; lovely Cathy, whose fine dark eyes seemed to hold a brooding sorrow, an elusive shadow of anticipated sadness which Marvin was unaware of except to feel a great and almost overwhelming desire to protect and cherish this seemingly fragile girl with her secret which she could not reveal, who had come at last to him, a man without a secret which he could reveal.

Their happiness was flawed and ennobled. There was the bomb in Marvin's nose, ticking away the inexorable seconds of his destiny, providing a strict metronomic measure for their dance of love. But this sense of foredoomedness caused their opposed destinies to twine closer, and it informed their relationship with grace and meaning.

He created waterfalls for her out of the morning dew, and from the colored pebbles of a meadow stream he made a necklace more beautiful than emeralds, sadder than pearls. She caught him in her net of silken hair, she carried him down, down, into deep and silent waters, past obliteration. He showed her frozen stars and molten sun; she gave him long, entwined shadows and the sound of black velvet. He reached out to her and touched moss, grass, ancient trees, iridescent rocks; her fingertips, striving upwards, brushed old planets and silver moonlight, the flash of comets and the cry of dissolving suns.

They played games in which he died and she grew old; they did it for the sake of the joyous rebirth. They dissected time with love, and put it back together longer, better, slower. They invented toys out of mountains, plains, lakes, valleys. Their souls glistened like healthy fur.

They were lovers. They could conceive of nothing but love.

But some things hated them. Dead stumps, barren eagles, stagnant ponds — these things resented their happiness. And certain urgencies of change ignored their declarations, indifferent to human intentions and content to continue their work of breaking down the universe. Certain conclusions, resistant to trans-

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formation, hastened to comply with ancient directives written on the bones, stencilled on the blood, tattooed into skin.

There was a bomb which needed explosion. There was a secret which required betrayal. And out of fear came knowledge and sadness.

And one morning, Cathy was gone as if she had never been.

XXII

Gone! Cathy was gone! Could it be possible? Could Life, that deadpan practical joker, be up to his disastrous tricks again?

Marvin refused to believe it. He searched the confines of the posada, and he poked patiently through the little village beyond it. She was gone. He continued his search in the nearby city of San Ramon de las Tristezas, and he questioned waitresses, landlords, shopkeepers, whores, policemen, pimps, beggars and other inhabitants. He asked if they had seen a girl fair as the dawn, with hair of indescribable beauty, limbs of a previously-unheard-of felicity, features whose comeliness was matched only by their harmony, etc. And those he questioned sadly replied, "Alas, senor, we have not seen thees woman, not now or ever in our lives."

He calmed himself enough to give a coherent description, and found a road-mender who had seen a girl like Cathy travelling west in a large automobile with a bulky, cigar-smoking man. And a chimney sweep had spied her leaving town with her little gold and blue handbag. Her step had been firm.

Then a gas station attendant gave him a hastily scrawled note from Cathy which began, "Marvin dear, please try to understand and forgive me. As I tried to tell you so many times, it was necessary for me—"

The rest was illegible.

With the aid of a cryptanalyst, Marvin deciphered the closing words, which were: "But I shall always love you, and I hope you can find it in your heart to think of me occasionally with kindness. Your Loving Cathy."

The rest of the note, made enigmatic by grief, was insusceptible to human analysis.

To describe Marvin's emotion would be like trying to describe the dawn flight of the heron: both are ineffable and unspeakable. Suffice it to say that Marvin considered suicide, but decided against it.

Nothing was enough. Intoxication was merely maudlin. Renunciation of the world seemed no more than the act of a peevish child. Because of the inadequacy of the attitudes open to

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him. Marvin struck none. Dry-eyed and zombie-like he moved through his days and nights. He walked, he talked, he even smiled. He was unfailingly polite. But it seemed to his dear friend Valdez that the real Marvin had vanished in an instantaneous explosion of sorrow, and that in his place there walked a poorly modeled representation of a man. Marvin was gone; the ringer who moved in his place looked as if, in its unfailing mimicry of humanness, it might collapse at any moment from strain.

Valdez was both perplexed and dismayed. Never had the wily old Master of Searches seen such a difficult case. With desperate energy he tried to rally his friend out of his living death.

He tried sympathy: "I know exactly how you feel, my unfortunate companion, for once, when I was quite a young man, I had quite a comparable experience, and I found —"

That did nothing, so Valdez tried brutality: "Christ damn me for a winnieburne, but are ye still mawking abaht after that bit of fluff wot walked out on yer? Now by God's wounds, I tell thee this: there's women past counting in this world of ours, and the man's no man who'd curl himself up in the corner when there's good lovin' to be had without . . ."

No response. Valdez tried eccentric distraction:

"Look, look over there, I see three birds on a limb, and one has a knife thrust through its throat and a scepter clutched in its claw, and yet it sings more merrily than the others! What do you make of it, eh?"

Marvin made nothing of it. Undismayed, Valdez tried to rouse his friend by piteous self-referral.

"Well, Marvin, lad, the medics have taken a look at that skin rash of mine and it seems that it's a case of pandemic impetigo. They give me twelve hours on the outside, after that I cash in my chips and make room for another man at the table. But for my last twelve hours, what I'd like to do is —"

Nothing. Valdez, attempt to stir his friend with philosophy:

"The simple farmers know best, Marvin. Do you know what they say? They say that a broken knife makes a poor walking-stick. I think you should bear that in mind, Marvin . . ."

But Marvin absent-mindedly did not bear it in mind. Valdez swung to Hyperstrasian Ethics:

"Thou considerest thyself wounded, then? But consider: Self is Ineffable and Unitary, and not Susceptible to Externalities. Therefore it is merely a *Wound* which was *Wounded;* and this, being External to the Per-

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son and Extraneous to the Insight affords no Cause for the Imputation of Pain."

Marvin was not swayed. Valdez turned to psychology:

"Loss of the Beloved, according to Steinmetzer, is a ritual re-enactment of the loss of the Fecal Self. Therefore, amusingly enough, when we think we mourn the dear departed, we actually are grieving the irreparable loss of our excrement."

But this, too, could not penetrate Marvin's close-held passivity. His melancholic detachment from all human values seemed irrevocable; and this impression was heightened when, one quiet afternoon, his nose ring stopped ticking. It was not a bomb at all it was merely a gray warning from Marduk Kras's constituents. And thus Marvin no longer stood in imminent danger of having his head blown off.

But even this stroke of good fortune did nothing to alter his robotic spirits. Quite unmoved, he noted the fact of his salvation as one might observe the passing of a cloud from the face of the sun.

Nothing seemed to have any affect upon him. And even the patient Valdez, was finally led to exclaim: "Marvin, you are a goddam pain in the tail!"

Yet Marvin perservered, unmoved. And it seemed to Valdez and to the good people of San Ramon that this man was beyond human recall.

And yet, how little we know of the twists and turns of the human mind! For the very next day, contrary to all reasonable expectation, an event occurred which broke at last through Marvin's reserve, and inadvertently threw wide the floodgates of susceptibility behind which he had been hiding.

A single event! (Though it was in itself the beginning of yet another chain of casualty—the quiet opening move of yet another of the uncountable dramas of the universe.)

It began, absurdly enough, when Marvin glimpsed a face in the crowd. There was a strange and disturbing familiarity about that face. Where had he gazed upon that line of cheek and brow, those brown eyes with their faint tilt, that firm jaw?

Then he remembered; he had seen it, long ago, in a mirror.

It was the true and genuine face of Marvin Flynn; his very own face and body, long sought after, long denied him. It was the actual and original corpus of the unique and only Marvin Flynn—now animated by the criminal mind of Ze Kraggash, body-snatcher!

Marvin's own face was sneering

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at him! And the real Marvin Flynn stepped forward, all passivity stripped away, his fist raised in anger.

Kraggash saw him and hesitated for a moment, his (Marvin's) eyes a study in shock, his fingers betraying a fine tremor, and his downturned mouth revealing a hint of involuntary twitch. Then Kraggash whirled and fled into a narrow, dark and noisome alley.

Common sense did not entirely desert Marvin Flynn. He paused at the mouth of that ominous cul-de-sac; prudence dictated that he look for assistance before venturing its hidden convolutions. But he had caught sight of a slender figure hurrying away on Kraggash's arm.

It could not be . . . And yet, it was indeed—Cathy!—She looked back once, with no recognition in her gray eyes. Then she too disappeared into the alley's serpentine coils.

Rationality has its limits, as the lemmings well know. Marvin's emotions at this moment transcended his potentialities for self-control. He charged forward, his face flamed with insensate fury, his eyes bloodshot and unseeing, cheeks ashen, lower jaw slack as a berserker's, his upper lip drawn back in the *risus sardonicus* of a Malay running amok.

Five blind steps he took into that strait and infamous passage. And then a flagstone gave way beneath his feet, and a section of pavement pivoted on a concealed hinge.

Marvin was catapulted headlong down a winding stone chute, while above him the judas-flagstone pivoted neatly back into position.

XXIII

Consciousness returned with agonizing ambiguity. Marvin opened his eyes and found that he was in an underground cell.

The place was lighted only by the splutter of torches, set into paired iron embrochures on the wall. The ceiling seemed to press down upon him, stone-bellied and oppressive. From the cold granite there depended bulging growths of fungus, which hung in obscene festoons. It was a place constructed for the desolation of the human spirit, whose chill granite was the temperature of the grave, whose acoustics were designed for the high-pitched shrill of pain, and whose color was the exact and sickening hue of mortality.

Out of the shadows stepped Kraggash. "It would seem," the criminal drawled, "that we have played this farce long enough. The denouement approaches."

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"Have you then prepared your third act?" Marvin inquired steadily.

"The actors have been given their cues," Kraggash responded. Negligently he snapped his fingers.

Into the circle of torchlight stepped Cathy.

"This," Marvin said simply, "lies beyond my comprehension."

"Oh, Marvin, can I ever explain my apparent treachery?" Cathy cried, with tears dripping from her overcast gray eyes. "How can I make you understand the diverse and unpleasant reasons behind my marriage with Kraggash?"

"Marriage!" Marvin cried.

"I dared not tell you sooner, for fear it would anger you," Cathy said piteously. "But believe me, Marvin, he courted me with threats and indifference, and captivated me by a dark power which I cannot pretend to understand. And further, by the use of drugs and double-edged words and sly skillful movements of his hands he succeeded in bemusing my sense into a state of counterfeit passion, until I seemed to faint for touch of his damnable body and for nibblature of his detestable lips. And since during this time I was denied the comforts of religion, and therefore had no way of knowing the true from the induced, I did indeed succumb. Nor can I expect any forgiveness in this world or the next. Nor do I ask it."

"Oh Cathy, Cathy, my poor Cathy!" Marvin declaimed to the weeping girl.

"Ha, ha, ha!" laughed Kraggash. "A touching scene, but as ineffectual as it is apropos. But enough of this. There enters now the final actor of our farce!"

Again Kraggash snapped his fingers. From the shadows stepped a masked man, clad in black from tip to toe, and carrying over his shoulder a great double-headed axe.

"Good day to you, executioner," Kraggash drawled. "Forward now, and do your duty."

The executioner stepped forward and tested the edges of his great axe. He drew the weapon high over his head, stoop poised for a moment; and then—shockingly—he began to giggle.

"Strike!" Kraggash howled. "Have you taken leave of your senses, man? Strike, I tell you!"

But the executioner, still giggling, lowered his blade. Then, with skilled fingers, he plucked off his mask.

"Detective Urdorf!" Marvin cried.

"Yes, it is I," the Martian detective said. "I am sorry we had to put you through so much anxiety, Marvin; but it was our best

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opportunity of bringing your case to a successful conclusion. My colleague and I decided—"

"Colleague?" Marvin asked.

"I refer," Urdorf said, grinning wryly, "to special agent Catherine Mulvavey."

Marvin turned to Cathy. She had already pinned to her bodice the red and blue badge of a special agent in the Interplanetary Vigilance Association.

"I—I think I understand," Marvin said.

"It's really simple enough," Detective Urdorf said. "In working on your case, I had, as is usual, the aid and cooperation of various other law enforcement agencies. Upon three separate occasions we came close to capturing our man; but always he evaded us. This might have gone on indefinitely had we not tried this scheme of entrapment. The theory was sound; for if Kraggash could succeed in destroying you, he could claim your body as his own without fear of a counter-claimant. Whereas, as long as you were alive, you would continue to search for him.

"Thus, we enticed you into this murderous scheme, hoping that Kraggash would take advantage of the opportunity of destroying you. The rest is history."

Turning to the criminal, Detective Urdorf said, "Kraggash, have you anything to add?"

The thief with Marvin's face lounged gracefully against the wall, his arms folded and his body replete with composure.

"I might hazard a comment or two," Kraggash said. "First, let me point out that your scheme was clumsy and transparent. I believed it to be a hoax from the start, and entered it only on the distant possibility of it being true. Therefore, I am not surprised at this outcome."

"An amusing rationalization," Urdorf said.

Kraggash shrugged. "Secondly, I want to tell you that I feel no moral compunction in the slightest at my so-called crime. If a man cannot retain control of his own body, then he deserves to lose it. I have observed, during a long and varied lifetime, that men will give their bodies to any rogue who asks, and will enslave their minds to the first voice that commands them to obey. This is why the vast majority of men cannot keep even their natural birthright of a mind and body, but choose instead to rid themselves of those embarrassing emblems of freedom."

"That," Detective Urdorf said, "is the classic *apologia* of the criminal."

"That which you call a crime when one man does it," Kraggash said, "you call government when

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many men do it. Personally, I fail to see the distinction; and failing to see it, I refuse to live by it."

"We could stand here all year splitting words," Detective Urdorf said. "But I do not have time for such recreation. Try your arguments on the prison chaplain, Kraggash. I hereby arrest you for illegal Mindswapping, attempted murder, and grand larceny. Thus I solve my 158th case and break my chain of bad luck."

"Indeed?" Kraggash said coolly. "Did you really think it would be so simple? Or did you consider the possibility that the fox might have another lair?" he sneered at them.

"Take him!" Detective Urdorf shouted.

He, Marvin and Cathy moved swiftly toward Kraggash. But even as they moved, the criminal raised his hand and drew a swift circle in the air.

The circle brilliantly glowed with fire!

Kraggash put one leg over the circle. His leg disappeared. "If you want me," he said mockingly, "you'll know where to find me."

As they rushed him, Kraggash stepped into the circle, and all of him vanished except his head. He winked at Marvin, then his head was gone, and nothing was

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left except the circle of fire.

"Come on!" Marvin shouted. "Let's get him!"

He turned to Urdorf, and was amazed to see that the detective's shoulders had slumped, and that his downcast face was gray with defeat.

"Hurry!" Marvin cried.

"It is useless," Urdorf said. "I thought I was prepared for any ruse . . . but not for this. The man is obviously insane."

"What can we do?" Marvin shouted.

"We can do nothing," Urdorf said. "He has gone into the Twisted World, and I have failed in my 158th case."

"But we can still follow him!" Marvin declared, moving up to the fiery circle.

"No! You must not!" Urdorf declared. "You—do—not—understand—the Twisted World means death, or madness . . . or both! Your chances of coming through it are so small—"

"I have just as good a chance as Kraggash," Marvin shouted and stepped into the circle.

"Wait, you still do not understand!" Urdorf shouted. "Kraggash *has no chance!*"

But Marvin did not hear those final words, for he had already vanished through the flaming circle, moving inexorably into the strange and unexplored reaches of the Twisted World.

XXIV

SOME EXPLANATIONS OF THE TWISTED WORLD

". . . thus, through the Riemann-Hake equations, a mathematical demonstration existed at last of the theoretical necessity for Twistermann's Spatial Area of Logical Deformation. This Area became known as the Twisted World, though it was neither twisted nor a world. And, by a final irony, Twistermann's all-important third definition (that the Area could be considered as that region of the universe which acted as an equipoise of chaos to the logical stability of the primary structure) was proven superfluous."

—Article on "The Twisted World," from the Galactic Encyclopedia of Universal Knowledge, 483rd edition.

". . . therefore, the term *mirror-deformation* carries the sense (if not the substance) of our thought. For indeed, as we have seen, the Twisted World (sic) performs the work, both necessary and hateful, of rendering indeterminate all entities and processes, and thereby making the universe theoretically as well as practically ineluctable."

—From "Musings of a Mathematician," Edgar Hope Grief, Euclid City Free Press.

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But despite this, a few very tentative rules might be adduced for the suicidal traveller to the Twisted World:

Remember that all rules may lie, in the Twisted World; including this rule which points out the exception, and including this modifying clause which invalidates the exception . . . ad infinitum.

But also remember that no rule *necessarily* lies; that any rule may be true, including this rule and its exceptions.

In the Twisted World, time need not follow your preconceptions. Events may change rapidly (which seems proper), or slowly (which feels better), or not at all (which is hateful).

It is conceivable that *nothing whatsoever* will happen to you in the Twisted World. It would be unwise to expect this, and equally unwise to be unprepared for it.

Among the kingdoms of probability which the Twisted World sets forth, one must be exactly like our World; and another must be exactly like our world except for one detail; and another exactly like ours except for two details; and so forth. And also—one must be completely *unlike* our world except for one detail; and so forth.

The problem is always prediction; how to tell what world you are in before the Twisted World reveals it disastrously to you.

In the Twisted World, as in any other, you are apt to discover yourself. But only in the Twisted World is that meeting usually fatal.

Familiarity breeds shock—in the Twisted World.

The Twisted World may conveniently (but incorrectly) be thought of as a reversed world of Maya, of illusion. You may find that the shapes around you are real; while You, the examining consciousness, are illusion. Such a discovery is enlightening, albeit mortifying.

A wise man once asked, "What would happen if I could enter the Twisted World without preconceptions?" A final answer to his question is impossible; but we would hazard that he would have some preconceptions by the time he came out. Lack of opinion is not armor.

Some men feel that the height of intelligence is the discovery that all things may be reversed, and thereby become their opposites. Many clever games can be played with this proposition; but we do not advocate its use in the Twisted World. There all doctrines are equally arbitrary, including the doctrine of the arbitrariness of doctrines.

Do not expect to outwit the Twisted World. It is bigger,

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smaller, longer and shorter than you. It does not prove. It is.

Something which *is* never has to prove anything. All proofs are attempts at becoming. A proof is true only to itself; and it implies nothing except the existence of proofs—which prove nothing.

Anything which *is*, is improbable, since everything is extraneous, unnecessary and a threat to the reason.

These comments concerning The Twisted World may have nothing to do with the Twisted World. The traveller is warned.

—From "The Inexorability of the Specious," by Ze Kraggash; from the Marvin Flynn Memorial Collection.

XXV

The transition was abrupt, and not at all what Marvin thought it would be. He had heard stories about the Twisted World, and had hazily expected to find a place of melting shapes and shifting colors, of grotesques and marvels. But he saw at once that his viewpoint had been romantic and limited.

He was in a small waiting-room. The air was stuffy with sweat and steam heat, and he sat on a long wooden bench with several dozen other people. Bored-looking clerks strolled up and down, consulting papers, and occasionally calling for one of the waiting people. Then there would be a whispered conference. Sometimes a man would lose patience and leave. Sometimes a new applicant would arrive.

Marvin waited, watched.

Time passed slowly, the room grew shadowy, someone switched on overhead lights. Still no one called his name. Marvin glanced at the men on either side of him, bored rather than curious.

The man on his left was very tall and cadaverous, with an inflamed boil on his neck where the collar rubbed. The man on his right was short and fat and red-faced, and he wheezed with every breath.

"How much longer do you think it should take?" Marvin asked the fat man, more to pass the time than in a serious attempt to gain knowledge.

"Long? How long?" the fat man said. "*Damned* long, that's how long it'll take. You can't hurry their goddamned majesties here in the Automobile Bureau, not even when all you want is to have a perfectly ordinary driver's license renewed, which is what I'm here for."

The cadaverous man laughed: a sound like a stick of wood rapping against an empty gasoline can.

"You'll wait a goddamned long

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time, baby," he said, "since you happen to be sitting in the Department of Welfare, Small Accounts Division."

Marvin spat thoughtfully on the dusty floor and said, "It happens that both of you gentlemen are wrong. We are seated in the Department, in the *anteroom* of the Department, to be precise, of the Department of Fisheries, I was trying to say. And in my opinion it is a pretty state of affairs when a citizen and taxpayer cannot even go fishing in a tax-supported body of water without wasting half a day or more applying for a license."

The three glared at each other. (There are no heroes in the Twisted World, damned few promises, a mere scattering of viewpoints, and not a conclusion in a carload.)

They stared at each other with not particularly wild surmise. The cadaverous man began to bleed slightly from the fingertips. Marvin and the fat man frowned with embarrassment and affected not to notice. The cadaverous man jauntily thrust his offending hand into a waterproof pocket. A clerk came over to them.

"Which of you is James Grinnell Starmacher?" the clerk asked.

"That's me," Marvin replied. "And I want to say that I've been waiting here for some little time, and I think this Department is run in quite an inefficient fashion."

"Yeah, well," the clerk said, "it's because we haven't got in the machines yet." He glanced at his papers. "You have made application for a corpse?"

"That is correct," Marvin said.

"And you affirm that said corpse will not be used for immoral purposes?"

"I so affirm."

"Kindly state your reasons for acquiring this corpse."

"I wish to use it in a purely decorative capacity."

"Your qualifications?"

"I have studied interior decorating."

"State the name and/or identification code number of the most recent corpse obtained by you."

"Cockroach," Marvin replied, "Brood number 3/32/A45345."

"Killed by?"

"Myself. I am licensed to kill all creatures not of my subspecies, with certain exceptions such as the golden eagle and the manates."

"The purpose of your last killing?"

"Ritual purification."

"Request granted," the clerk said. "Choose your corpse."

The fat man and the cadaverous man looked at him with wet, hopeful eyes. Marvin was tempt-

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ed, but managed to resist. He turned and said to the clerk, "I choose you."

"It shall be so noted," the clerk said, scribbling on his papers. His face changed to the face of the pseudo-Flynn. Marvin burrowed a cross-cut saw from the cadaverous man, and, with some difficulty, cut the clerk's right arm from his body. The clerk expired unctuously, his face changing once again to his clerk's face.

The fat man laughed at Marvin's discomfiture. "A little transsubstantiality goes a long way," he sneered. "But not far enough, eh? Desire shapes flesh, but death is the final sculptor."

Marvin was crying. The cadaverous man touched his arm in a kindly manner. "Don't take it so hard, kid. Symbolic revenge is better—than no revenge at all. Your plan was good; its flaw was external to yourself. *I* am James Grinnell Starmacher."

"I am a corpse," said the clerk's corpse. "Transposed revenge is better than no revenge."

"I came here to renew my driving license," the fat man said. "To hell with all you deep thinkers, how about a little service?"

"Certainly, sir," said the corpse of the clerk. "But in my present condition, I can license you only to fish for dead fish."

"Dead, alive, what difference does it make?" the fat man said. "Fishing is the thing; it doesn't matter so much what you catch."

He turned to Marvin, perhaps to amplify that statement. But Marvin had left.

—and, after an unpersuasive transition, found himself in a large, square, empty room.

The walls were made of steel plates, and the ceiling was a hundred feet above his head. There were floodlights up there, and a glassed-in control booth. Peering at him through the glass was Kraggash.

"Experiment 342," Kraggash intoned crisply. "Subject: Death. Proposition: Can a human being be killed? Remarks: This question concerning the possible mortality of human beings has long perplexed our finest thinkers. A considerable folklore has sprung up around the subject of death, and unverified reports of *killings* have been made throughout the ages. Furthermore, corpses have been brought forth from time to time, indubitably dead, and represented as the remains of human beings. Despite the ubiquity of these corpses, no casual link has ever been proven to show that they ever lived, much less that they were once human beings. Therefore, in an attempt to settle the question once and for all, we have set up the following experiment. Step one . . ."

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A steel plate in the wall flew back on its hinge. Marvin whirled in time to see a spear thrust forth at him. He sidestepped, made clumsy by his lame foot, and evaded the thrust.

More plates popped open. Knives, arrows, clubs, all were flung at him from various angles.

A poison gas generator was pushed through an opening. A tangle of cobras was dropped into the room. A lion and a tank bounded forward. A blowgun hissed. Energy weapons crackled. Flamethrowers coughed. A mortar cleared its throat.

Water flooded the room, rising quickly. Naptha fire poured down from the ceiling.

But the fire burned the lions, which ate the snakes, which clogged the howitzers, which crushed the spears, which jammed the gas generator, which dissolved the water which quenched the fire.

Marvin stood forth miraculously unscathed. He shook his fist at Kraggash, slipped on the steel plating, fell and broke his neck. He was afforded a military funeral with full honors. His widow died with him on the flaming pyre. Kraggash tried to follow, but was refused the solace of suttee.

Marvin lay in the tomb for three days and three nights, during which time his nose dripped continuously. His entire life passed before his eyes in slow-motion. At the end of that time he arose and moved onward.

There were five objects of limited but undeniable sentience in a place with no qualities worth mentioning. One of these objects was, presumably, Marvin. The other four were lay figures, hastily sketched stereotypes designed for the sole purpose of adorning the primary situation. The problem confronting the five was, which of them was Marvin, and which were the unimportant background figures.

First came a question of nomenclature. Three of the five wished to be called Marvin immediately, one wanted to be called Edgar Floyd Morrison, and one wished to be referred to as "unimportant background figure."

This was quite obviously tendentious, and so they numbered themselves from one to four, the fifth stubbornly insisting upon being called Kelly.

"All right, already," said Number One, who had already taken on officious air. "Gentlemen, could we maybe stop beating our gums and bring this meeting to order?"

"A Jewish accent won't help you here," Number Three said darkly.

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"Look," said Number One, "what would a Polack know about Jewish accents? As it happens, I am Jewish only on my father's side, and although I esteem—"

"Where am I?" said Number Two. "My God, what happened to me? Ever since I left Stanhope . . ."

"Shut up, Wop," Number Four said.

"My name-a not Wop, my name-a shesa Luigi," Number Two responded swarthily. "I bin two year in your greata country ever' since I leetle boy in village San Minestrone della Zuppa, nicht wahr?"

"Sheet, man," Number Three said darkly. "You ain't no dago-wop stall nohow, you ain't nuttin but jes' a plain ornary provisional background figure of limited flexibility; so suppose you jes shut you mout afore I do dat little ting for you, nicht wahr?"

"Listen," said Number One, "I'm a simple man of simple tastes and if it'll help any I'll give up my rights to Marvinhood."

"Memory, memory," muttered Number Two. "What has happened to me? Who are these apparitions, these talkative shades?"

"Oh I say!" Kelly said. "That's really bad form, old man!"

"Itsa pretty goddamn disingenuous," muttered Luigi.

"Invocation is *not* convocation," said Number Three.

"But I really don't remember," said Number Two.

"So I don't remember so good neither," said Number One. "But do you hear me making a big thing of it? I'm not even claiming to be human. The mere fact that I can recite Leviticus by heart don't prove nothing."

"Too right it doesn't!" shouted Luigi. "And disproof don't prove any flaming thing neither."

"I thought you were supposed to be Italian," Kelly said to him.

"I am, but I was raised in Australia. It's rather a strange story—"

"No stranger than mine," Kelly said. "Black Irishman do you call me? But few know that I passed my formative years in a Hangchow dosshouse, and that I enlisted in the Canadian army to escape French persecution for my part in aiding the Gaullists in Mauretania. That is why—"

"Zut, alors!" cried Number Four. "One can keep silence no longer! To question my credentials is one thing; to asperse my country is another!"

"Yer indignation don't prove a thing!" Number Three cried. "Not that I really care, since I choose no longer to be Marvin."

"Passive resistence is a form of aggression," Number Four responded.

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"Inadmissable evidence is still a form of evidence," Three retorted.

"I don't know what any of you are talking about," Number Two declared.

"Ignorance will get you nowhere," Number Four snarled. "I refuse categorically to be Marvin."

"You can't give up what you haven't got," Kelly said archly.

"I can give up anything I damned well want to!" Number Four cried passionately. "I not only give up my Marvinity; I also step down from the throne of Spain, yield up the dictatorship of the Inner Galaxy and renounce my salvation in Bah'ai."

"Feel better now, kid? Simplification suits my intricate nature," Number Four said. "Which of you is Kelly?"

"I am," Kelly said.

"Do you realize," Luigi asked him, "that only you and I have names?"

"That's true," Kelly said. "You and I are different!"

"Here now, just a moment!" Number One said.

"Time gentlemen, time, please!"

"Hold the fort!"

"Hold your water!"

"Hold the phone!"

"As I was saying," Luigi said. "We! Us! The Named Ones of the Proof Presumptive! Kelly — you can be Marvin if I can be Kraggash!"

"Done!" roared Kelly, over the protests of the lay figures.

Marvin and Kraggash grinned at each other in the momentary euphoria of identity-intoxication. Then they flung themselves at each other's throats. Manual strangulation followed. The three numbered ones, robbed of a birthright they had never possessed, took up conventional poses of stylized ambiguity. The two lettered ones, granted an identity they had seized anyhow, tore and bit at each other, flung forth defiant arias and cringed before devastating recitations. Number One watched until he grew bored, then began playing with a lap dissolve.

That did it. The whole shooting works slid away like a greased pig on roller skates coming down a solid glass mountain, only slightly faster.

Day succeeded night, which succeeded in making a perfect fool of itself.

Plato wrote: "It ain't whatcha do, it's the way thatcha do it." Then, deciding that the world was not yet ready for this, he scrubbed it out.

Hammurabi wrote: "The unexamined life is not worth living." But he wasn't sure it was true, so he scratched it out.

Gautama Buddha wrote:

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"Brahmins stink." But later he revised it.

They . . .

were . . .

. . . locked in titanic combat, which, since it had happened, was inevitable. Marvin smote Kraggash upon the breastbone, then smote him again upon the nose-bone. Kraggash promptly changed into Ireland, which Marvin invaded as a demi-legion of Danish berserkers, forcing Kraggash to attempt a kingside pawn-storm, which stood no chance against a low flush. Marvin reached for his opponent, missed and devastated Atlantis. Kraggash swung backhanded and slaughtered a gnat.

Deadly the battle raged across the steaming swamps of the Miocene; a colony of termites mourned their queen as Kraggash cometed helplessly into Marvin's sun, fragmenting at last into countless militant spores. But Marvin unerringly picked the diamond from the glittering glass, and Kraggash fell back upon Gibraltar.

His bastion fell in a night when Marvin kidnapped the barbary apes, and Kraggash speeded across southern Thrace with his body in a suitcase. He was seized at the frontier of Phthistia, a country which Marvin improvised.

Weakening, Kraggash became evil; becoming evil, Kraggash grew weak. In vain he invented devil-worship. The followers of Marvinity bowed down not to the idol, but rather to the symbol. Evil, Kraggash turned nasty: dirt grew beneath his fingernails, noxious tufts of hair appeared on his soul.

Helpless at last Kraggash lay, the incarnation of evil, with the body of Marvin clutched in his talon. Rites of exorcism induced his final agony. A buzz saw disguised as a prayer-wheel dismembered him, a mace masquerading as a censor brained him. Kindly old Father Flynn intoned over him the last words: "Thou gettest no bread with one meat ball." And Kraggash was put into a tomb hewn out of the living Kraggash. Appropriate graffiti were carved upon his tombstone, and flowering Kraggash was planted around his grave.

It is a quiet spot. To the left is a grove of Kraggash trees, to the right is an oil refinery. Here is an empty beer can, here is a gypsy moth. And just beyond is the spot where Marvin opened the suitcase and took out his long-lost body.

He blew the dust off it and combed its hair. He wiped its nose and straightened its tie. Then, with seemly reverence, he put it on.

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XXVI

And thus Marvin Flynn found himself back on Earth and inside his own body.

He went to his home town of Stanhope, and found things unchanged. The town was still some three hundred miles from New York in physical distance, and some hundred years away in spiritual and emotional distance. Just as before there were the orchards, and the clusters of brown cows grazing against the rolling green pastureland. Eternal was the elm-lined Main Street and the lonely late-night wail of a jetliner.

No one asked Marvin where he had been. Not even his best friend, Billy Hake, who assumed he had taken a jaunt to one of the regular tourist spots like Sinkiang or the lower Ituri Rain Forest.

At first, Marvin found this invincible stability as upsetting as he had ever found the tranpositions of Mindswap or the deformed conundrums of the Twisted World. Stability seemed exotic to him; he kept on waiting for it to fade away.

But places like Stanhope do not fade, and boys like Marvin gradually lose their sense of enchantment and high purpose.

Alone late at night in his attic room, Marvin often dreamed of Cathy. He still found it difficult to think of her as a special agent of the Planetary Vigilance Association. And yet, there had been a hint of officiousness in her manner, and a glint of the righteous prosecutor in her eyes.

He loved her and would always mourn her loss; but he was more content to mourn her than to possess her.

And, if the truth must be told, Marvin's eye had already been caught, or recaptured, by Marsha Baker, the demure and attractive young daughter of Edwin Marsh Baker, Stanhope's leading real estate dealer.

Stanhope, if not the best of all possible worlds, was still the best world Marvin had seen. It was a place where you could live without things jumping out at you and you jumping out at things. No metaphoric deformation was possible in Stanhope; a cow looked exactly like a cow, and to call it anything else was unwarrantable poetic license.

And so, undoubtedly: east, west, home's the best; and Marvin set himself the task of enjoyment of the familiar, which sentimental wise men say is the apex of human wisdom.

His life was marred only by one or two small doubts. First and foremost was the question: How had he come back to Earth from the Twisted World?

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He did considerable research on this question, which was more ominous than it first seemed. He realized that nothing is impossible in the Twisted World, and that nothing is even improbable. There is causality in the Twisted World, but there is also non-causality. Nothing *must* be; nothing is *necessary*.

Because of this, it was quite conceivable that the Twisted World had flung him back to Earth, showing its power by relinquishing its power over Marvin.

That indeed seemed to be what had happened. But there was another, less pleasant alternative.

This was expressed in the Doorham Propositions as follows: "Among the kingdoms of probability which the Twisted World sets forth, one must be exactly like our world, and another must be exactly like our world except for one detail, and another exactly like our world except for two details, and so forth."

Which meant that he might still be on the Twisted World, and that this Earth which he perceived might be no more than a passing emanation, a fleeting moment of order in the fundamental chaos, destined to be dissolved at any moment back into the fundamental senselessness of the Twisted World.

In a way it made no difference, since nothing is permanent except our illusions. But no one likes to have his illusions threatened, and Marvin wanted to know where he stood.

Was he on Earth, or was he on a replica of Earth?

Might there not be some significant detail inconsistent with the Earth he had left? Might there not be several details? Marvin tried to find out for the sake of his peace of mind. He explored Stanhope and its environs, looked and tested and checked the flora and fauna.

Nothing seemed to be amiss. Life went on as usual; his father tended his herds of rats, and his mother placidly continued to lay eggs.

He went north to Boston and New York, then further south to the vast Philadelphia-Los Angeles area. Everything seemed in order.

He contemplated sailing east across the continent on the mighty Delaware River and continuing his search in the California cities of Schenectady, Milwaukee and Shanghai.

He changed his mind, however, realizing that there was no sense in spending his life trying to discover whether or not he had a life to spend.

Besides, there was the possibility that, even if the Earth

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were changed, his memory and perceptions might also be changed, rendering discovery impossible.

He lay beneath Stanhope's familiar green sky and considered this possibility. It seemed unlikely: for did not the giant oak trees still migrate each year to the south? Did not the huge red sun move across the sky, pursued by its dark companion? Did not the triple moons return each month with their new accumulation of comets?

These familiar sights reassured him. Everything seemed to be as it always had been. And so, willingly and with a good grace, Marvin accepted his world at face value, married Marsha Baker and lived forever after. — ROBERT SHECKLEY

★ ★ ★ ★ ★

FORECAST

Next issue's lead story is called *Do I Wake or Dream?*, and it's by someone you've heard of before. It is, in fact, by the man who wrote *Dune World*, *Under Pressure* and a goodly number of other recent, memorable science-fiction stories, Frank Herbert. Although Herbert is no stranger to *Galaxy*, this is by all odds the longest story of his we've been able to publish; even longer than Robert Sheckley's *Mindswap* in the current issue, and we give you fair warning that it's going to crowd us in spite of *Galaxy's* largest-number-of-pages-in-science-fiction.

Still, that's the way we have to publish this particular story. It concerns a handful of people on a long-line trip to another star, in an experimental ship guided and operated by a computer. Or so it seems. But in fact the people are not exactly what you think; the trip is not precisely what they expect; and the computer — Well, you'll see when you read it. Herbert has written it brilliantly, inventively and with a growing pace and tension; but in doing so he has so arranged things that it would be distinctly unfair for us to split it up into a serial. Ergo — complete in our next: *Do I Wake or Dream?*

It will crowd us . . . but we think it's going to be worth it.

Also for sure is Willy Ley's column (on giant stars) and Algis Budrys's books reviews. We've got some really first-rate novelettes in stock — Cordwainer Smith, James Blish and Norman L. Knight, etc. — and at least one of them will be with us, as well, no doubt, as an additional short or two; but just which remain to be seen. But it will be a good issue, we're pretty sure of that. In fact, from now on it's our personal opinion that they'll all be.

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SERVANT PROBLEM

by OTIS KIDWELL BURGER

They also serve who only stand and wait — wait for a way out!

The sandstorms had been worse than usual that day, rattling the window panes of the Central Office Building on the planet Dexter, and sifting all afternoon over the outlying settlement of prefabs.

Sandstorms were the worst feature of a climate mostly far better then that of the other colonized planets in that part of the universe, but generally they were restricted to a brief afternoon flurry. On such bad days, however, they blew daylong. Dusk came early, and the whine of wind and sand, sweeping in from the surrounding deserts, emphasized the loneliness and remoteness of the little outpost town. Paint rasped from houses. Sand drifted in streets and gardens; leveling, reclaiming human habitation back into desert and alien space. Work habits and tempers snapped.

Lights had gone on early in the Central Office. Most of the personnel had left. Jim Richards had been kept late, in a wind-haunted lighted emptiness, to redo some sloppily compiled reports. His wife had called three times, mostly to complain about the weather.

When she called again, to say she had forgotten to get his shirts from the laundry (probably closed now), and that it was time to take Miss Sissing to the bus, he blew up.

"Why the hell didn't you get my shirts?"

"I wasn't feeling well."

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"So send Miss Sissing for the shirts. What're servants *for*? Or better yet, whyn't *you* drive her to the bus now, and get the shirts, too? Why does it always have to be me? I work all day. Do I have to run all the errands too?"

"I'm not feeling well."

"You never are."

"It's the beginning of the servants' vacation today," she said, even more feebly. "She's *got* to be there."

"So let her wait a few minutes. The bus doesn't leave for hours."

"You *know* she's got to be there early."

He slammed down the phone, fully determined to let Miss Sissing wait, for once. All Dexter's servants went back, four times a year, to spend their vacations on Dexter's two moons. It was generally a time of inconvenience and bad temper. No. Let Miss Sissing wait.

At this point, all the office fuses blew out.

With no excuse to linger in the dark, he drove home. The dark, dust-scoured streets were empty and derelict, and the toy-like little houses with their neat, artificial gardens around them looked forlorn and shuttered. Most of the other servants had presumably already been taken to the bus station. He tried to dawdle further, but the little air-propelled car suddenly refused to work properly, except at high speeds; and he found himself at home, and then driving Miss Sissing to her bus, far sooner than he had intended.

Beside her, driving through the dark streets, he was aware of her pinched, spinsterish profile; the straw hat jammed over a bun of graying hair, the faded eyes behind steel-rimmed spectacles. A humanoid caricature. The private life of these alien beings was unimaginable to him. What did she do on vacation? Play croquet and read bad novels? he thought, hating equally her presence and her absence. There was no doubt the servants were a convenience. They were assigned to all the couples on the base, along with a pre-fab house and an air-car. Since most of the newly-wed wives, like Jim's, were sick much of the time with gravity and climate, the servants were often a necessity. Miss Sissing, in some ways, was ideal. An excellent cook and housekeeper. Unobtrusive. Well, not always, really. Not if, and when, during Jim's and Barbara's frequent quarrels, he was always aware of her presence. Scrimpy prim spinster! Bad as having a mother-in-law.

He dropped Miss Sissing at

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the bus station, a big half-empty landing field on the edge of town. There was little traffic, except for the buses, and occasional ships that stopped in from other planets. Idling his car, he watched her climb out and join all the other servants, who were still filing into the huge bare barn-like airport at the end of the field, to wait for the departure of their flight.

"Night, Mr. Richards."

"Night, Miss Sissing," he said grudgingly. "See you next week."

He had planned to by-pass the laundry all together, and say it had been closed (heaping coals on Barbara's head), and perhaps drop in instead on Mrs. Rapp. For a drink, at least.

Mrs. Rapp's husband had been the one, of that couple, who had been unable to stand the climate. He had in fact died some months ago. Mrs. Rapp had been widely and discreetly consoled ever since.

But just outside the laundry, the car's motor suddenly died. He got out. While he was staring at the hood, the laundryman recognized him and brought out his shirts. In the interim, a dark figure rang at Mrs. Rapp's house, two blocks away, and went in. Jim paid for his shirts and drove home instead. The car worked perfectly again.

The servant problem was perhaps more urgently discussed on the planet Dexter than in most suburban communities.

There was no question of firing bad servants. They came with the house. Though couples might graduate to other servants and other houses, and were generally in due time reassigned to another planet (Dexter was merely the first stage, or conditioning-ground, toward future assignments in space), they had no choice in servants so long as they stayed on Dexter.

Since the matching of servant-to-master often seemed not only arbitrary, but downright malicious, this arrangement caused much grumbling.

"I understand the government's policy of wanting to hire the local lower-life forms, and thus give us some kind of economic welcome," Jim said. The usual servants'-vacation party had gathered in his house that evening. Barbara had pulled herself together sufficiently to put on a green wool dress and rhinestone earrings. She looked attractive, and he was willing, now to shunt his wrath onto Where it Belonged. "But why, for instance, condemn one to a Miss Sissing, the New England spinster of outer space? Why not at least give a choice of evils?"

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"You rather have something blonde, and . . . I know *you*." Barbara nudged him in the ribs, not too gently.

"My Miss Minnie," Ellen Seltz said, spilling a drink down her stout, soft, beflowered self. "Oh, dear . . . Always hurrying, she is. She answers the phone, and leaves chicken tracks for notes. You'd think the government'd give them a secretarial course before turning them loose on us. Such a bother that girl is. She makes me nervous."

Big Herb Shannon said, "That ain't the worst. Wait'll your wife starts quoting *yours* as gospel. Miss Fallon said do this, Miss Fallon said do that. I can't even git in bed with my wife 'thout wonderin' what Miss Fallon'd say." He chuckled, with the deep rich Southern chuckle that particularly irritated Jim. It seemed rather studied, after twenty years on various planets far from North Carolina. But then, they all had a tendency to hang on to irritating little habits. Pieces of home, perhaps.

His wife, Nancy, a plucked and haggard Southern belle of fifty, with sharp eyes, chewed her nails. The Shannons had never gotten away from Dexter for long. Something always happened; Herb took to drink, Nancy had a bout of nerves. His work went poorly. They never had children. And back they came, time and again. "Oh, you hush," she said to her husband. "Ah Miss Fallon's a jewel an' you know it. But Ah wish she could make a shortcake like youah Pearl, honey," she said to Edna Ransome.

"Who also, and I happen to know, listens in on my phone conversations," Edna said sharply. Her earrings swung wildly as she turned. She and Nancy Shannon were among the few healthy wives on Dexter, having both been there long enough to adjust; and the only ones, therefore, with enough ragged nervous energy to be continuously in conflict. They enjoyed contradicting each other. "I don't know how she listens. Sometimes she's *rooms* away . . . I just *know* she does. Like once when George called to say he couldn't be on time to drive her to the bus. She got herself a ride with Mr. Hanson before I'd even *told* her what George said."

"The help anywheah have an undahgroun' system of communication, honey," Mrs. Shannon said.

Paul Baniff, the mineralogist, sat in the corner half-listening to this familiar conversation. The only scientist in a group composed mostly of minor officials and clerks, he regarded his present company with some de-

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tachment. It was always like this, when the servants left. An outburst of personalities and complaints. But nobody ever asked the real questions.

"No," he said aloud, suddenly. "There *is* something spooky about them. About my Bessie, anyway. I'm sure she's been looking into my files. Why, I don't know. It's mostly routine technical reports . . . but it's an odd thing for a mere servant . . ."

He stopped abruptly, as if invisibly jerked. For a moment his eyes looked totally blank, then he slowly closed his mouth.

The silence stretched uncomfortably. Then Nancy Shannon began chewing her nails; Ellen Seltz chewed her eyeglasses; Herb Shannon scratched his stomach. Barbara surreptiously scratched her shoulderblades beneath the green wool dress. Little Mrs. Nugent blinked her pink-rimmed eyes, and said:

"My Ella is simply marvelous with the baby."

It was almost the only baby on the planet, and the silence gave her an opportunity to talk about it, almost uninterruptedly, for fifteen minutes. The others listened, occupied with their own private tics. Paul Baniff watched glumly. "If I tell her the most *complicated* schedule . . . poor baby has feeding and teething problems, you know . . ."

Out in the kitchen, Jim Richards and Edna Ransome kissed fervently. "Naughty," she said, wiping lipstick off his face.

Outside, Dexter's two moons swam down to rest below the horizon, and the big searchlights around the settlement snapped on: guardians against the dark jungles and waste lands. There was nothing very dangerous out there. Dexter had no native wildlife except plants, some of which were poisonous on contact, but none of which were perambulatory or predatory. The searchlights merely made the inhabitants feel safer at night. Distant illuminations, that lit the way between houses, or between bedrooms and bathrooms, and kept off the nightmare possibility of Something unexpectedly, stealthily, crossing the cleared strip between village and wilderness.

With the night searchlights on, now, they felt it safe to go home. In a flurry of farewells and last drinks, Jim's and Barbara's guests left their cosy chairs and went back to bed.

It would be the Shannon's turn to entertain the next night. None of them, except perhaps Paul Baniff, the only single man and scientist, could quite bear that stretch between end-of-work

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and searchlights-on alone. Or even in couples . . .

"You didn't buy enough liquor," Barbara said when they had gone.

"Hell, yes, I did. You're the one. Forgot to put enough crackers and stuff."

"Didn't have enough to give Paul a third drink, even."

"So what? You served the same lousy crackers you've served the last three times. If you can't think of something new, get Miss Sissing to think of something."

'I can get on all right without Miss Sissing."

"You're drunk and shut up," he said.

"I'm not, an' if you're so hot for Miss Sissing, whyn't you marry her instead? What you should've married is a servant, not a wife . . ."

He hit her; she broke a glass throwing it at him. Then she cried, and he put her to bed.

The other marital tiffs and conversations died out into sleep, throughout the colony. Beneath the vast alien stars, the searchlights turned their comforting beams.

Miss Sissing entered the doors of the airlock, where she took off her uniform and waited. Decompression took time.

Coming out, she was given a notebook, and then went into the big inner room where all the other servants were already sitting at desks, scribbling.

She ran quickly down the report card, grading from 1 (Excellent) to 5 (failing, hesitating only occasionally:

Marital relations 4

Relationship with others 3

Follow directions 2

Uses spare time constructively 4—

Courteous in speech and manner—with adults 2 with classmates 3—

Observes school and group rules 3—

After some thought, she added, under Comments, "Jim's relation to the group seems improved. He can articulate his own wants better, and his ability to listen to others has deepened. He still, however, has difficulty with personal relations, and takes badly to guidance, even from his wife. There is still a marked tendency to anti-social behavior, and to aggression generally. He is careless about his work habits, and his homework. Jim is basically normal, but for the time being we recommend that he be given further special treatment and that he not be promoted to the 1st grade."

She put down her pen, closed the notebook and then pulled her ear thoughtfully and yawned.

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Neither Miss Sissing's ear nor her mouth went back to shape after these gestures. They continued to pull and stretch, as did the mouths, ears, and faces of the other servants around the room. She handed in her report with a hand that stretched until it became a tendril; and, turning to Paul Baniff's servant, who sat next to her, let a smile run wholly around her face until the face vanished into a knob topped, whimsically, by five eyes; running idly through several changes, as someone tired of holding an unnatural position for a long time may yawn and stretch.

"I suppose," she said, from a mouth that had suddenly appeared from the tip of an antennae, "that you passed Paul."

"Skipped him a grade," said what-had-been Bessie. "He's getting too hard to hold. After that remark about his desk tonight, I recommended that they move him tomorrow. When are they going to promote *you*, by the by?"

"I may get 3rd grade next time, if I'm lucky," said a voice from what remained of Miss Sissing's feet. "I've been going to night school. Any more of this kindergarten, and I'd be playing with blocks, too."

All around the room, the sitting shapes stretched, yawned, grew, altered, until they each nearly reached the top of the huge building. Then, single file, they walked out of the building to the waiting space bus, where they were carried off until next term to Dexter's two moons, leaving their charges asleep in the gentle night-light of the search lights.

— OTIS KIDWELL BURGER

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BLUE FIRE

by ROBERT SILVERBERG

ILLUSTRATED BY GAUGHAN

Most religions offer a way to heaven. The Vorsters gave a promise of going to the stars!

I

There was chaos in the face of the earth, but to the man in the Nothing Chamber it did not matter.

Ten billion people — or was it twelve billion by now? — fought for their place in the sun. Skyscrapers shot heavenward like sprouting beanstalks. The Martians mocked. The Venusians spat. Nut-cults flourished, and in a thousand cells the Vorsters bowed low to their devilish blue glow. All of this, at the moment, was of no significance to Reynolds Kirby. He was out of it.

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He was the man in the Nothing Chamber.

The place of his repose was four thousand feet above the blue Caribbean, in his hundredth-story apartment on Tortola in the Virgin Islands. A man had to take his rest somewhere. Kirby, as a high official in the U.N., had the right to warmth and slumber, and a substantial chunk of his salary covered the overhead on his hideaway. The building was a tower of shining glass whose foundations drove deep into the heart of the island. One could not build a skyscraper like this on every Caribbean island; too many of them were flat disks of dead coral, lacking the substance to support half a million tons of dead weight. Tortola was different, a retired volcano, a submerged mountain. Here they could build, and here they had built.

Reynolds Kirby slept the good sleep.

Half an hour in a Nothing Chamber restored a man to vitality, draining the poisons of fatigue from his body and mind. Three hours in it left him limp, flaccid willed. A twenty-four hour stint could make any man a puppet. Kirby lay in a warm nutrient bath, ears plugged, eyes capped, feed-lines bringing air to his lungs. There was nothing like crawling back into the womb for a while when the world was too much with you.

The minutes ticked by. Kirby did not think of Vorsters. Kirby did not think of Nat Weiner, the Martian. Kirby did not think of the esper girl, writhing in her bed of torment, whom he had seen in Kyoto last week.

Kirby did not think.

A voice purred, "Are you ready, Freeman Kirby?"

Kirby was not ready. Who ever was? A man had to be driven from his Nothing Chamber by an angel with a flaming sword. The nutrient bath began to bubble out of the tank. Rubber-cushioned metal fingers peeled the caps from his eyeballs. His ears were unplugged. Kirby lay shivering for a moment, expelled from the womb, resisting the return to reality. The chamber's cycle was complete; it could not be turned on again for twenty-four hours, and a good thing, too.

"Did you sleep well, Freeman Kirby?"

Kirby scowled rustily and clambered to his feet. He swayed, nearly lost his balance, but the robot servitor was there to steady him. Kirby caught a burnished arm and held it until the spasm passed.

"I slept marvelously well," he told the metal creature. "It's a pity to return."

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"You don't mean that, Freeman. You know that the only true pleasure comes from an engagement with life. You said that to me yourself, Freeman Kirby."

"I suppose I did," Kirby admitted drily. All of the robot's pious philosophy stemmed from things he had said. He accepted a robe from the squat, flat-faced thing and pulled it over his shoulders. He shivered again. Kirby was a lean man, too tall for his weight, with stringy, corded arms and legs, close-cropped gray hair, deep-set greenish eyes. He was forty, and looked fifty, and before climbing into the Nothing Chamber today he had felt about seventy.

"When does the Martian arrive?" he asked.

"Seventeen hours. He's at a banquet in San Juan right now, but he'll be along soon."

"I can't wait," Kirby said. Moodily he moved to the nearest window and depolarized it. He looked down, way down, at the tranquil water lapping at the beach. He could see the dark line of the coral reef, green water on the hither side, deep blue water beyond. The reef was dead, of course. The delicate creatures who had built it could stand only so much motor fuel in their systems, and the level of tolerance had been passed quite some time ago. The skittering hydrofoils buzzing from island to island left a trail of murderous slime in their wake.

The U.N. man closed his eyes. And opened them quickly, for when he lowered the lids there appeared on the screen of his brain the sight of that esper girl again, twisting, screaming, biting her knuckles, yellow skin flecked with gleaming beads of sweat. And the Vorster man standing by, waving that damned blue glow around, murmuring, "Peace, child, peace, you will soon be in harmony with the All."

That had been last Thursday. This was probably the following Wednesday. She was in harmony with the All by now, Kirby thought, and an irreplaceable pool of genes had been scattered to the four winds. Or the seven winds. He was having trouble keeping his cliches straight these days.

Seven *seas,* he thought. Four winds.

The shadow of a copter crossed his line of sight.

"Your guest is arriving," the robot declared.

"Magnificient," Kirby said sourly.

The news that the Martian was on hand set Kirby jangling with tension. He had been selected as the guide, mentor, and watchdog

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for the visitor from the Martian colony. A great deal depended on maintaining friendly relations with the Martians, for they represented markets vital to Earth's economy. They also represented vigor and drive, commodities currently in short supply on Earth.

But they were also a headache to handle — touchy, mercurial, unpredictable. Kirby knew that he had a big job on his hands. He had to keep the Martian out of harm's way, coddle him and cosset him, all without ever seeming patronizing or oversolicitous. And if Kirby bungled it, well, it could be costly to Earth and fatal to Kirby's own career.

He opaqued the window again and hurried into his bedroom to change into robes of state. A clinging gray tunic, green foulard, boots of blue leather, gloves of gleaming golden mesh — he looked every inch the important Earthside official by the time the annunciator clanged to inform him that Nathaniel Weiner of Mars had come to call.

"Show him in," Kirby said.

The door irised open and the Martian stepped nimbly through. He was a small, compact man in his early thirties, unnaturally wide-shouldered, with thin lips, jutting cheekbones, dark beady eyes. He looked physically powerful, as though he had spent his life struggling with the killing gravity of Jupiter, not romping in the airy effortlessness of Mars. He was deeply tanned, and a fine network of wrinkles radiated from the corners of his eyes. He looked aggressive, thought Kirby. He looked arrogant.

"Freeman Kirby, it's a pleasure to see you," the Martian said in a deep, rasping voice.

"The honor is mine, Freeman Weiner."

"Permit me," Weiner said. He drew his laser pistol. Kirby's robot scurried forward with the velvet cushion. The Martian placed the weapon carefully on the plush mound. The robot slid across the floor to bring the gun to Kirby.

"Call me Nat," the Martian said.

Kirby smiled thinly. He picked up the gun, resisted the insane temptation to ash the Martian on the spot, and briefly examined it. Then he replaced it on the cushion and flicked his hand at the robot, who carried it back to its owner.

"My friends call me Ron," Kirby said. "Reynolds is a lousy first name."

"Glad to know you, Ron. What's to drink?"

Kirby was jarred by the breach of etiquette, but he maintained an equitable diplomatic mask.

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The Martian had been punctilious enough with his gun-ritual, but you'd expect that with any frontiersman; it didn't mean that his manners extended beyond that.

Smoothly Kirby said, "Whatever you like, Nat. Synthetics, realies, you name it and it's here. What about a filtered rum?"

"I've had so much rum I'm ready to puke it, Ron. Those gabogos in San Juan drink it like water. What about some decent whiskey?"

"You dial it," Kirby said with a grand sweep of his hand. The robot picked up the console of the bar and carried it to the Martian. Weiner eyed the buttons a moment and stabbed almost at random, twice.

"I'm ordering a double rye for you," Weiner announced. "And a double bourbon for me."

Kirby found that amusing. The rude colonial was not only selecting his own drink but one for the host. Double rye, indeed! Kirby hid his wince and took the drink. Weiner slipped comfortably into a webfoam cradle. Kirby sat also.

"How are you enjoying your visit to Earth?" Kirby asked.

"Not bad. Not bad. Sickening the way you people are crammed together here, though."

"It's the human condition."

"Not on Mars it isn't. Not on Venus either."

"Give it time," Kirby said.

"I doubt it. We know how to regulate our population up there, Ron."

"So do we. It just took us a while to get the idea across to everybody, and by that time there were ten billion of us. We hope to keep the rate of increase down."

"You know what?" Weiner said. "You ought to take every tenth person and feed 'em to the converters. Get some good energy back out of all that meat. Cut your population by a billion over-night." He chuckled. "Not serious. Wouldn't be ethical. Just a passing joke."

Kirby smiled. "You aren't the first to suggest it, Nat. And some of the others were serious."

"Discipline, that's the answer to every human problem. Discipline and more self-discipline. Denial. Planning. This whiskey is damned good, Ron. How about another round?"

"Help yourself."

Weiner did. Generously.

"Damned fine stuff," he murmured. "We don't get drinks like this on Mars. Got to admit it, Ron. Crowded and stinking as this planet is, it's got comforts. I wouldn't want to live here, mind you, but I'm glad I came. The women — *mmmm*! The drinks! The excitement!"

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"You've been here two days?" Kirby asked.

"That's right. One night in New York, ceremonies, banquet, all that garbage, sponsored by the Colonial Association. Then down to Washington to see the President. Nice old chap. Soft belly, though. Could stand some exercise. Then this idiot thing in San Juan, a day of hospitality, meeting the Puerto Rican comrades, that kind of junk. And now here. What's to do here, Ron?"

"Well, we could go downstairs for a swim, first —"

"I can swim all I like on Mars. I want to see civilization, not water. Complexity." Weiner's eyes glowed. Kirby abruptly realized that the man had been drunk when he walked in, and that the two stiff jolts of bourbon had sent him into a fine glow of intoxication. "You know what I want to do, Kirby? I want to get out and grub in the dirt a little. I want to go to opium dens. I want to see espers have ecstasies. I want to take in a Vorster session. I want to live the life, Ron. I want to experience Earth — muck and all!"

II

The Vorster hall was in a shabby, almost intolerably seedy old building in central Manhattan, practically within spitting distance of the U.N. buildings. Kirby felt queasy about entering it; he had never really conquered his uneasiness about slumming, even now when most of the world was one vast teeming slum. But Nat Weiner had commanded it, and so it must be. Kirby had brought him here because it was the only Vorster place he had visited before, and so he didn't feel too sharply out of place.

The cult was an important new force in Earthly affairs, Kirby knew — though he didn't know much more than that. Any religious or quasi-religious movement that could grow so swiftly had to be important. In a world increasingly fragmented and chaotic, the Vorsters obviously had something.

The sign over the door said in glowing but splotchy letters:

BROTHERHOOD OF THE
IMMANENT RADIANCE
ALL WELCOME
SERVICES DAILY
HEAL YOUR HEARTS
HARMONIZE WITH
THE ALL

Weiner snickered at the sign. "Look at that! Heal your hearts! How's your heart, Kirby?"

"Punctured in several places. Shall we go in?"

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"You bet we shall," Weiner said.

The Martian was sloshingly drunk. He held his liquor well, Kirby had to admit. Through the long evening Kirby had not even tried to match the colonial envoy drink for drink, and yet he felt hazy and overheated. The tip of his nose prickled. He yearned to shake Weiner off and crawl back into the Nothing Chamber to get all this poison out of his system.

But Weiner wanted to kick over the traces, and it was hard to blame him for that. Mars was a rough place, where there was no time for self-indulgence. Terraforming a planet took a maximum effort. The job was nearly done, now, after two generations of toil, and the air of Mars was sweet and clean, but no one was relaxing up there yet. Weiner was here to negotiate a trade agreement, but it was also his first chance to escape from the rigors of Martian life. The Sparta of space, they called it. And here he was in Athens.

They entered the Vorster hall.

It was long and narrow, an oblong box of a room. A dozen rows of unpainted wooden benches ran from wall to wall, with a narrow aisle down one side. At the rear was the altar, glowing with the inevitable blue radiance. Behind it stood a tall, skeleton-thin man, bald, bearded.

"Is that the priest?" Weiner whispered harshly.

"I don't think they're called priests," said Kirby. "But he's in charge."

"Do we take communion?"

"Let's just watch," Kirby suggested.

"Look at all these damn maniacs," the Martian said.

"This is a very popular religious movement."

"I don't get it."

"Watch. Listen."

"Down on their knees—grovelling to that half-pint reactor—"

Heads were turning in their direction. Kirby sighed. He had no love for the Vorsters or their religion himself, but he was embarrassed at this boisterous desecration of their shrine. Most undiplomatically, he took Weiner's arm, guided the Martian into the nearest pew, and pulled him down into a kneeling position. Kirby knelt beside him. The Martian gave him an ugly glance. Colonists didn't like their bodies handled by strangers. A Venusian might have slashed at Kirby with his dagger for something like that. But, then, a Venusian wouldn't be here on Earth at all, let alone cutting capers in a Vorster hall.

Suddenly, Weiner grabbed the rail and leaned forward to watch

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the service. Kirby squinted through the near darkness at the man behind the altar.

The reactor was on, and glowing—a cube of Cobalt-60, shielded by water, the dangerous radiations gobbled up before they could sear through flesh. In the darkness Kirby saw a faint blue glow, rising slowly in brightness, growing more intense. Now the lattice of the tiny reactor was masked in whitish-blue light, and around it swirled a weird greenish-blue glow that seemed almost purple at its core. It was the Blue Fire, the eerie cold light of the Cerenkov radiation, spreading outward to envelop the entire room.

It was nothing mystical, Kirby knew. Electrons were surging through that tank of water, moving at a velocity greater than light in that medium, and as they moved they hurled forth a stream of photons. There were neat equations to explain the source of the Blue Fire. Give the Vorsters credit: they didn't say it was anything supernatural. But it made a useful symbolic instrument, a focus for religious emotions, more colorful than a crucifix, more dramatic than the tables of the Law.

The Vorster up front said quietly, "There is a Oneness from which all life stems. The infinite variety of the universe we owe to the motion of the electrons. Atoms meet; their particles entwine. Electrons leap from orbit to orbit and chemical changes are worked."

"Listen to the pious bastard," Weiner snorted. "A chemistry lecture, yet!"

Kirby bit his lip in anguish. A girl in the pew just in front of theirs turned round and said in a low, urgent voice, "Please. Please — just listen."

She was such a numbing sight that even Weiner was struck dumb for once. The Martian gasped in shock. Kirby, who had seen surgically altered women before, scarcely reacted at all. Iridescent cups covered the openings where her ears had been. An opal was mounted in the bone of her forehead. Her eyelids were of gleaming foil. The surgeons had done things to her nostrils, to her lips. Perhaps she had been in some terrible accident. More likely she had had herself maimed for cosmetic purposes. Madness. Madness.

The Vorster said, "The energy of the sun — the green life surging in plants — the bursting wonder of growth — for this we thank the electron. The enzymes of our body — the sparking synapses of our brains — the beating of our hearts — for this we thank the electron. Fuel and

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food, light and heat, warmth and nourishment, everything and all, rising from the Oneness, rising from the Immanent Radiance—"

The thought stunned him.

How had it stolen upon him? This was no religion. This was cultism, a wildfire movement, the latest fad, here today, gone tomorrow. Ten million converts overnight? What of it? Tomorrow or the next day would come the newest prophet, exhorting the faithful to plunge their hands into a scintillation counter's sparkling bath, and the Vorster halls would be deserted. This was no rock. This was quicksand.

And yet there had been that momentary pull—

Kirby tightened his lips. It was the strain, he thought, of shepherding this wild Martian around all evening. He didn't give a damn for the supernal Oneness. The underlying unity of all things meant nothing to him. This was a place for the tired, the neurotic, the novelty-hungry, for the kind of person who would cheerfully pay good money to have her ears cut off and her nostrils slit. It was a measure of his own desperation that he had been almost ready to join the communicants at the altar.

He relaxed.

And in the same moment Nat Weiner burst to his feet and went careening down the aisle.

"Save me!" the Martian cried. "Heal my goddam soul! Show me the Oneness!"

"Kneel with us, brother," the Vorster leader said equably.

"I'm a sinner!" Weiner howled. "I'm full of booze and corruption! I got to be saved! I embrace the electron! I yield!"

Kirby hurried after him down the aisle. Was Weiner serious? The Martians were notorious for their resistance to any and all religious movements, including the established and legitimate ones. Had he somehow succumbed to that hellish blue glow?

"Take the hands of your brethren," the leader murmured. "Bow your head and let the glow enfold you."

Weiner looked to his left. The girl with the surgical alterations knelt beside him. She held out her hand. Four fingers of flesh, one of some turquoise-hued metal.

"It's a monster!" Weiner shrieked. "Take it away! I won't let you cut me up!"

"Be calm, brother—"

"You're a bunch of phonies! Phonies! Phonies! Phonies! Nothing but a pack of—"

Kirby got to him. He dug his fingertips into the ridged muscles of Weiner's back in a way that the Martian was likely to notice.

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In a low, intense voice Kirby said, "Let's go, Nat. We're getting out of here."

"Take your stinking hands off me, Earther!"

"Nat, please—this is a house of worship—"

"This is a bughouse! Crazy! Crazy! Crazy! Look at them! Down on their knees like stinking maniacs!" Weiner struggled to his feet. His booming voice seemed to batter at the walls. "I'm a free man from Mars! I dug in the desert with these hands! I watched the oceans fill! What did any of you do? You cut your eyelids off and wallowed in muck! And you—you fake priest, you take their money and love it!"

The Martian grabbed the altar rail and vaulted over it, coming perilously close to the glowing reactor. He clawed at the towering, bearded Vorster.

Calmly the cultist reached out and slipped one long arm through the pinwheeling chaos of Weiner's threshing limbs. He touched his fingertips to the Martian's throat for a fraction of a second.

Weiner fell like a dead man.

III

"Are you all right now?" Kirby asked, dry-throated.

Weiner stirred. "Where's that girl?"

"The one with the surgery?"

"No," he rasped. "The esper. I want her near me again."

Kirby glanced at the slender, blue-haired girl. She nodded tensely and took Weiner's hand. The Martian's face was bright with sweat and his eyes were still wild. He lay back, head propped on pillows, cheeks hollow.

They were in a sniffer palace across the street from the Vorster hall. Kirby had had to carry the Martian out of the place himself, slung across his shoulders; the Vorsters did not let robots in. The sniffer palace seemed like as good a place as any to take him.

The esper girl had come over to them as Kirby staggered into the place. She was a Vorster too—the blue hair was the tip-off—but apparently she had finished her worship for the day, and was topping things off with a quick inhalation. With instant sympathy she had bent to peer at Weiner's flushed, sweat-flecked face. She had asked Kirby if his friend had had a stroke.

"I'm not sure what happened to him," Kirby said. "He was drunk and began trouble in the Vorster place. The leader of the service touched his throat."

The girl smiled. She was waiflike, fragile, no more than eighteen, nineteen. Cursed with talent. She closed her eyes, took

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Weiner's hand, clutched the thick wrist until the Martian revived. Kirby did not know what she had done. All this was mystery to him.

Now, strength flowing back into him visibly from moment to moment, Weiner tried to sit up. He seized the girl's hand and held it. She did not attempt to break free.

He said, "What did they hit me with?"

"It was a momentary alteration of your charge," the girl told him. "He turned off your heart and brain for a thousandth of a second. There will be no permanent damage."

"How'd he do it? He just touched me with his fingers."

"There is a technique. But you'll be all right."

Weiner eyed the girl. "You an esper? You reading my mind right now?"

"I'm an esper, but I don't read minds. I'm just an empath. You're all churned up with hatred. Why don't you go back across the street? Ask him to forgive you. I know he will. Let him teach you. Have you read Vorst's book?"

"Why don't you just go to hell?" Weiner said casually. "No, don't. You're too cute. We got some cute espers on Mars, too. You want some fun tonight? My name's Nat Weiner, and this is my friend, Ron Kirby. *Reynolds* Kirby. He's a stuffed shirt, but we can give him the slip." The Martian's grip on the slender arm grew tighter. "What do you say?"

The girl didn't say anything. She simply frowned, and Weiner made a strange face and released her arm. Kirby, watching, had to repress a grin. Weiner was running into trouble all over the place. This was a complicated world.

"Go across the street," the girl whispered. "They'll help you there."

She turned without waiting for a reply, and faded into the dimness. Weiner passed a hand over his forehead as though brushing cobwebs from his brain. He struggled to his feet, ignoring Kirby's proffered arm.

"What kind of place is this?" he asked.

"A sniffer palace."

"Will they preach to me here?"

"They'll just fog your brain a little," said Kirby. "Want to try?"

"Sure. I told you I wanted to try everything. I don't get a chance to come to Earth every day."

Weiner grinned, but it was a somber grin. He didn't seem to have the bounce he had had an hour ago. Of course, getting knocked out by the Vorster had

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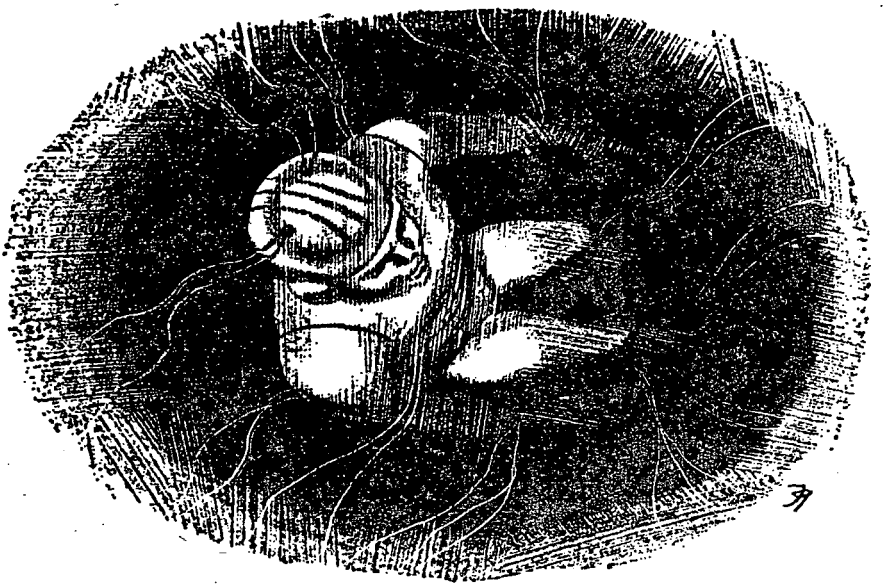

sobered him some. He was still game, though, ready to soak up all the sins this wicked planet had to offer.

Kirby wondered whether he was making as big a mess of this assignment as it seemed. There was no way of knowing—not yet. Later, of course, Weiner might well protest the handling he had received, and Kirby might find himself abruptly transferred to less sensitive duties in the future. That was not a pleasant thought. He regarded his career as an important matter, perhaps the only important matter in his life. He did no want to wreck it in a night.

They moved toward the sniffer booth.

"Tell me," Weiner said. "Do those people really believe all that crap about the electron?"

"I really don't know. I haven't made a study of it, Nat."

"You've watched the movement appear. How many members does it have now?"

"A couple of million, I guess."

"That's plenty. We only have seven million people on all of Mars. If you've got this many joining this nutty cult—"

"There are lots of new religious sects on Earth today," Kirby said. "It's an apocalyptic time. People are hungry for reassurance. They feel the Earth's being

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left behind by the stream of events. So they look for a unity, for some way out of all the confusion and fragmentation."

"Let them come to Mars if they want a unity. We got work for everybody, and no time to stew about the allness of it all." Weiner guffawed. "The hell with it. Tell me about this sniffer stuff."

"Opium's out of fashion. We inhale the more exotic mercaptans. The hallucinations are said to be entertaining."

"*Said* to be? Don't you know? Kirby, don't you have first-hand information about *anything*? You aren't even alive. You're just a zombie. A man needs some vices, Kirby."

The U.N. man thought of the Nothing Chamber waiting for him in the lofty tower on balmy Tortola. His face was a stony mask. He said, "Some of us are too busy for vices. But this visit of yours is likely to be a great education for me, Nat. Have a sniff."

A robot rolled up to them. Kirby clapped his right thumb against the lambent yellow plate set in the robot's chest. The light brightened as Kirby's print-pattern was recorded.

"We'll bill your Central," the robot said. Its voice was absurdly deep: pitch-troubles on the master tape, Kirby suspected. When the metal creature rolled away, it was listing a bit to starboard. Rusty in the gut, he figured. An even chance that he wouldn't be billed.

He picked up a sniffer mask and handed it to Weiner, who sprawled out comfortably on the couch along the wall of the booth. Weiner donned it. Kirby took the other mask and slipped it over his nose and mouth. He closed his eyes and settled into the webfoam cradle near the booth's entrance. A moment passed; then he tasted the gas creeping into his nasal passages. It was a revolting sour-sweet smell, a sulphuric smell.

Kirby waited for the hallucination.

There were people who spent hours each day in these booths, he knew. The government kept raising the tax to discourage the sniffers, but they came anyway, even at ten, twenty, thirty dollars a sniff. The gas itself wasn't addictive, not in the metabolic way that heroin got to you. It was more of a psychological addiction, something you could break if you really tried, but which nobody cared to try to break: like the sex addiction, like mild alcoholism. For some it was a kind of religion. Everyone to his own creed; this was a crowded world, harboring many beliefs.

A girl made of diamonds and

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emeralds was walking through Kirby's brain.

The surgeons had cut away every scrap of living flesh on her body. Her eyeballs had the cold glitter of precious gems; her breasts were globes of white onyx tipped with ruby; her lips were slabs of alabaster; her hair was fashioned from strings of yellow gold. Blue fire flickered around her, Vorster fire, crackling strangely.

She said, "You're tired, Ron. You need to get away from yourself."

"I know. I'm using the Nothing Chamber every other day, now. I'm fighting off a crackup."

"You're too rigid, that's your trouble. Why don't you visit my surgeon? Have yourself changed. Get rid of all that stupid meat. For this I say, that flesh and blood cannot inherit the kingdom of God; neither doth corruption inherit incorruption."

"No," Kirby muttered. "It isn't so. All I need is some rest. A good swim, sunshine, decent amount of sleep. But they dumped that mad Martian on me."

The hallucination laughed shrilly, rippled her arms, performed a sinuous convolution. They had sliced away fingers and replaced them with spikes of ivory. Her fingernails were of polished copper. The mischievous tongue that flicked out from between the alabaster lips was a serpent of gaudy flexiplast. "Behold," she crooned voluptuously, "I show you a mystery. We shall not all sleep, but we shall all be changed."

"In a moment," Kirby said. "In the twinkling of an eye. The trumpet shall sound."

"And the dead shall be raised incorruptible. Do it, Ron. You'll look so much more handsome. Maybe you can hold the next marriage together a little better, too. You miss her, admit it. You ought to see what she looks like now. Full fathom five thy loved one lies. But she's happy. For this corruptible one must put on incorruption, and this mortal must put on immortality."

"I'm a human being," Kirby protested. "I'm not going to turn myself into a walking museum piece like you. Or like *her,* for that matter. Even if it's becoming fashionable for men to have it done."

The blue glow began to pulse and throb around the vision in his brain. "You need something, Ron. The Nothing Chamber isn't the answer. It's—nothing. Affiliate yourself. Belong. Work isn't the answer either. Join. Join. You won't carve yourself? All right, become a Vorster, then. Surrender to the Oneness. Let death be swallowed up in victory."

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"Can't I just remain myself?" Kirby cried.

"What you are isn't enough. Not now. Not any more. These are hard times. A troubled world. The Martians make fun of us. The Venusians despise us. We need new organization, new strength. The sting of death is in sin, and the strength of sin is the law. Grave, where is thy victory?"

A riotous swirl of colors danced through Kirby's mind. The surgically altered woman pirouetted, leaped and bobbed, flaunted the jewel-bedecked flamboyance of herself in his face. Kirby quivered. He clawed fitfully at the mask. For this nightmare he had paid good money? How could people let themselves become addicts of this sort of thing—this tour through the swamps of one's own mind?

Kirby wrenched the sniffer mask away and threw it to the floor of the booth. He sucked clean air into his lungs, fluttered his eyes, returned to reality.

He was alone in the booth.

The Martian Weiner was gone.

IV

The robot who ran the sniffer palace was of no help.

"Where'd he go?" Kirby demanded.

"He left," came the rusty reply. "Eighteen dollars sixty cents. We will bill your Central."

"Did he say where he was going?"

"We did not converse. He left. *Awwwrk!* We did not converse. I will bill your Central. *Awwwrk!*"

Sputtering a curse, Kirby rushed out into the street. He glanced involuntarily at the sky. Against the darkness he saw the lemon-colored letters of the time-glow streaming in the firmament, irregularly splotched with red:

2205 HOURS
EASTERN STANDARD TIME
Wednesday May 8 2077
BUY FREEBLES—
THEY CRUNCH!

Two hours to midnight. Plenty of time for that lunatic colonial to get himself in trouble. The last thing Kirby wanted was to have a drunken, perhaps hallucinated Weiner rampaging around in New York. This assignment hadn't entirely been one of rendering hospitality. Part of Kirby's job was to keep an eye on Weiner. Martians had come to Earth before. The libertarian society was a heady wine for them.

Where had he gone?

One place to look was the Vorster hall. Maybe Weiner had gone back to raise some more hell over there. With sweat burst-

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ing from every pore Kirby spirited across the street, dodging the rocketing teardrops as they turbined past, and rushed into the shabby cultist chapel. The service was still going on. It didn't seem as though Weiner were there, though. Everyone obediently knelt in his pew, and there were no shouts, no screams of boozy laughter. Kirby silently loped down the aisle, checking every bench. No Weiner.

The girl with the surgical face was still there, and she smiled and stretched a hand toward him. For one bizarre moment Kirby was catapulted back into his sniffer hallucination, and his flesh crawled. Then he recovered himself. He managed a faint smile to be polite, and got out of the Vorster place as fast as he could.

He caught the sidewalk and let it carry him three blocks in a random direction. No Weiner, Kirby got off and found himself in front of a public Nothing Chamber place, where for twenty bucks an hour you could get wafted off to luscious oblivion. Perhaps Weiner had wandered in there, eager to try every mind-sapping diversion the city had to offer. Kirby went in.

Robots weren't in charge here. A genuine flesh-and-blood entrepreneur came forward, a four-hundred-pounder, opulent with chins. Small eyes buried in fat regarded Kirby doubtfully.

"Want an hour of rest, friend?"

"I'm looking for a Martian," Kirby blurted. "About so high, big shoulders, sharp cheekbones."

"Haven't seen him."

"Look, maybe he's in one of your tanks. This is important. It's U.N. business."

"I don't care if it's the business of God Almighty. I haven't seen him." The fat man glanced only briefly at Kirby's identification plaque. "What do you want me to do, open my tanks for you? He didn't come in here."

"If he does, don't let him rent a chamber," Kirby begged. "Stall him and phone U.N. Security right away."

"I got to rent him if he wants. We run a public hall here, buddy. You want to get me in trouble? Look, you're all worked up. Why don't *you* climb into a tank for a little while? It'll do wonders for you. You'll feel like—"

Kirby wheeled and ran out. There was nausea in the pit of his stomach, perhaps induced by the hallucinogen. There was also fright, and a goodly jolt of anger. He visualized Weiner clubbed in some dark alley, his stocky body expertly vivisected for the bootleg organ banks. A worthy fate, perhaps, but it would raise hob with Kirby's reliability rating. More likely was it that Weiner,

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bashing around like a Chinese bull—was that the right simile, Kirby wondered?—would stir up some kind of mess that would be blasphemously difficult to clean up.

Kirby had no idea where to look. A communibooth presented itself on the corner of the next street, and he jumped in, opaquing the screens. He rammed his identification plaque into the slot and punched for U.N. Security.

The cloudy little screen grew clear. The pudgy, bearded face of Lloyd Ridblom appeared.

"Night squad," Ridblom said. "Hello, Ron. Where's your Martian?"

"Lost him. He gave me the slip in a sniffer palace."

Ridblom became instantly animated. "Want me to slap a televector on him?"

"Not yet," Kirby said. "I'd rather he didn't know we were upset about his disappearance. Put the vector on me, instead, and keep contact. And open up a routine net for him. If he shows, notify me right away. I'll call back in an hour to change the instructions if nothing's happened by then."

"Maybe he's been kidnapped by Vorsters," Ridblom suggested. "They're draining his blood for altar wine."

"Go to hell," Kirby said. He stepped out of the booth and put his thumbs briefly to his eyeballs. Slowly, purposelessly, he strolled toward the slidewalk and let it take him back to the Vorster hall. A few people were coming out of it, now. There was the girl with the iridescent earshells; she wasn't content to haunt his hallucinations, she had to keep intersecting his path in real life too.

"Hello," she said. Her voice was gentle, at least. "I'm Vanna Marshak. Where's your friend?"

"I'm wondering that myself. He vanished a little while ago."

"Are you supposed to be in charge of him?"

"I'm supposed to be watching him, at least. He's a Martian, you know."

"I didn't. He's certainly hostile to the Brotherhood, isn't he? That was sad, the way he erupted during the service. He must be terribly ill."

"Terribly drunk," Kirby said. "It happens to all the Martians that come here. The iron bars are lifted for them, and they think anything goes. Can I buy you a drink?" he added mechanically.

"I don't drink, thanks. But I'll accompany you if you want one."

"I don't want one. I need one."

"You haven't told me your name."

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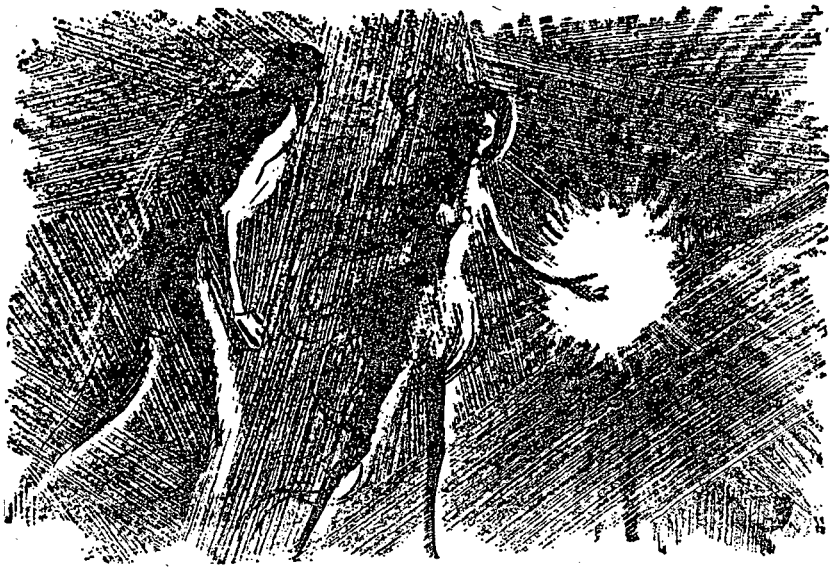

"Ron Kirby. I'm with the U.N. I'm a minor bureaucrat. No, I'll correct that: a major bureaucrat who gets paid like a minor one. We can go in here."

He nudged the doorstud of a bar on the corner. The sphincter whickered open and admitted them. She smiled warmly. She was about thirty, Kirby guessed. Hard to tell, with all that hardware where the face used to be.

"Filtered rum," he said.

Vanna Marshak leaned close to him. She wore some subtle and unfamiliar perfume. "Why did you bring him to the Brotherhood house?" she asked.

He downed his drink as though it were fruit juice. "He wanted to see what the Vorsters were like. So I took him."

"I take it you're unsympathetic personally?"

"I don't have any real opinion. I've been too busy to pay much attention."

"That's *not* true," she said easily. "You think it's a nutcult, don't you?"

Kirby ordered a second drink. "All right," he admitted. "I do. It's a shallow opinion based on no real information at all."

"You haven't read Vorst's book?"

"No."

"If I give you a copy, will you read it?"

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"Imagine," he said. "A proselyte with a heart of gold." He laughed. He was feeling drunk again.

"That isn't really very funny," she said. "You're hostile to surgical alterations too, aren't you?"

"My wife had a complete face-job done. While she was still my wife. I got so angry about it that she left me. Three years ago. She's dead, now. She and her lover went down in a rocket crash off New Zealand."

"I'm terribly sorry," Vanna Marshak said. "But I wouldn't have had this done to myself if I had known about Vorst then. I was uncertain. Insecure. Today I know where I'm heading—but it's too late to have my real face back. It's rather attractive, I think, anyway."

"Lovely," Kirby said. "Tell me about Vorst."

"It's very simple. He wants to restore spiritual values in the world. He wants us all to become aware of our common nature and our higher goals."

"Which we can express by watching Cerenkov radiation in rundown lofts," Kirby said.

"The Blue Fire's just trimming. It's the inner message that counts. Vorst wants to see mankind go to the stars. He wants us to get out of our muddle and confusion and begin to mine our real talents. He wants to save the espers who are going insane every day, harness them, put them together to work for the next great step in human progress."

"I see," said Kirby gravely. "Which is?"

"I told you. Going to the stars. You think we can stop with Mars and Venus? There are millions of planets out there. Waiting for man to find a way to reach them. Vorst thinks he knows that way. But it calls for a union of mental energies, a blending, a—oh, I know this sounds mystical. But he's got something. And it heals the troubled soul, too. That's the short-range purpose: the communion, the binding-up of wounds. And the long-range goal is getting to the stars. Of course, we've got to overcome the frictions between the planets—get the Martians to be more tolerant, and then somehow re-establish contact with the people on Venus, if there's anything human still left in them—do you see that there are possibilities here, that it isn't mumbo-jumbo and fraud?"

Kirby didn't see anything of the kind. It sounded hazy and incoherent to him. Vanna Marshak had a soft, persuasive voice, and there was an earnestness about her that made her appealing. He could even forgive her for what

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she had let the knife-wielders do to her face. But when it comes to Vorst—

The communicator in his pocket bleeped. It was a signal from Ridblom, and it meant call the office right away. Kirby got to his feet.

"Excuse me a minute," he said. "Something important to tend to—"

He lurched across the barroom, caught himself, took a deep breath and got into the booth. Into the slot went the plaque; trembling fingers punched out the number.

Ridblom appeared on the screen again.

"We've found your boy," the pudgy Security man announced blandly.

"Dead or alive?"

"Alive, unfortunately. He's in Chicago. He stopped off at the Martian Consulate, borrowed a thousand dollars from the consul's wife, and tried to rape her in the bargain. She got rid of him and called the police, and they called me. We have a five-man tracer on him now. He's heading for a Vorster cell on Michigan Boulevard, and he's drunk as a lord. Should we intercept him?"

Kirby bit his lip in anguish. "No. No. He's got immunity, anyway. Let me handle. Is there a chopper in the U.N. port?"

"Sure. But it'll take you at least forty minutes to get to Chi, and—"

"That's plenty of time. Here's what I want you to do: get hold of the prettiest esper you can find in Chicago, maybe an empath, some sexy kid, Oriental if possible, something like that one who had the burnout in Kyoto last week. Plunk her down between Weiner and that Vorster place and turn her loose on him. Have her charm him into submission. Have her stall him in any way possible until I can get there, and if she has to part with her honor in the process, tell her we'll give her a good price for it. If you can't find an esper get hold of a persuasive policewoman, or something."

"I don't see why this is really necessary," Ridblom said. "The Vorsters can look out for themselves. I understand they've got some mysterious way of knocking a troublemaker out so that he doesn't—"

"I know, Lloyd. But Weiner's already been knocked out once this evening. For all I know, a second jolt of the same stuff tonight might kill him. That would be very awkward all around. Just head him off."

Ridblom shrugged. "Thy will be done."

Kirby left the booth. He was cold sober again. Vanna Marshak

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was sitting at the bar where he had left her. At this distance, and in this light, there was something almost pretty about her artificial disfigurements.

She smiled. "Well?"

"They found him. He got to Chicago somehow and he's about to raise some hell in the Vorster chapel there. I've got to go and lasso him."

"Be gentle with him, Ron. He's a troubled man. He needs help."

"Don't we all?" Kirby blinked suddenly. The thought of making the trip to Chicago alone struck him abruptly as being nasty. "Vanna?" he asked.

"Yes?"

"Are you going to be busy for the next couple of hours?"

V

The copter hovered over Chicago's sparkling gaiety. Below, Kirby saw the bright sheen of Lake Michigan, and the splendid mile-high towers that lined the lake. Above him blazed the local timeglow in chartreue:

2331 HOURS
CENTRAL STANDARD TIME
Wednesday May 8 2077
OGLEBAY REALTY—
THE FINEST!

"Put her down," Kirby ordered.

The robopilot steered the copter toward a landing. It was impossible, of course, to risk the fierce wind currents in those deep canyons; they would have to land at a rooftop heliport. The landing was smooth. Kirby and Vanna rushed out. She had given him the Vorster message all the way from Manhattan, and at this point Kirby wasn't sure whether the cult was complete nonsense or some sinister conspiracy against the general welfare or a truly profound spiritually uplifting creed, or perhaps a bit of all three.

He thought he had the general idea. Vorst had cobbled together an eclectic religion, borrowing the confessional from Catholicism, absorbing some of the atheism of ur-Buddhism, adding a dose of Hindu reincarnation, and larding everything over with ultra-modernistic trappings, nuclear reactors at every altar and plenty of gabble about the holy electron. But there was also talk of harnessing the minds of espers to power a stardrive, of a communion even of non-esper minds, and—most startling of all, the big selling point—personal immortality, not reincarnation, not the hope of Nirvana, but eternal life in the here and now present flesh. In view of Earth's population problems, immortality was low on any sane man's priority

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list. Immortality for other people, anyway; one was always willing to consider the extension of one's own life, wasn't one? Vorst preached the eternal life of the body, and the people were buying. In eight years, the cult had gone from one cell to a thousand, from fifty followers to millions. The old religions were bankrupt. Vorst was handing out shining gold pieces, and if they were only fool's gold it would take a while for the faithful to find that out.

The copter touched down.

"Come on," Kirby said. "There isn't much time."

He scrambled down the exit ramp, turning to take Vanna Marshak's hand and help her the last few steps. They hurried across the rooftop landing area to the gravshaft, stepped in, dropped to ground level in a dizzying five-second plunge. Local police were waiting in the street. They had three teardrops.

"He's a block from the Vorster place, Freeman Kirby," one of the policemen said. "The esper's been dragging him around for half an hour, but he's dead set on going there."

"What does he want there?" Kirby asked.

"He wants the reactor. He says he's going to take it back to Mars and put it to some worthwhile use."

Vanna gasped at the blasphemy. Kirby shrugged, sat back, watched the streets flashing by. The teardrop halted. Kirby saw the Martian across the street.

The girl who was with him was sultry, fullbodied, lush looking. She had one arm thrust through his, and she was close to Weiner's side, cooing in his ear. Weiner laughed harshly and turned to her, pulled her close, then pushed her away. She clutched at him again. It was quite a scene, Kirby thought. The street had been cleared. Local police and a couple of Ridblom's men were watching grimly from the sidelines.

Kirby went forward and gestured to the girl. She sensed instantly who he was, withdrew her arm from Weiner, and stepped away. The Martian swung round.

"Found me, did you?"

"I didn't want you to do anythink you'd regret later on."

"Very loyal of you, Kirby. Well, as long as you're here, you can be my accomplice. I'm on my way to the Vorster place. They're wasting good fissionables in those reactors. You distract the priest, and I'm going to grab the blue blinker, and we'll all live happily ever after. Just don't let him shock you. That isn't fun."

"Nat —"

"Are you with me or aren't you, pal?" Weiner pointed toward the chapel, diagonally

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across the street a block away, in a building almost as shabby as the one in Manhattan. He started toward it.

Kirby glanced uncertainly at Vanna. Then he crossed the street behind Weiner. He realized that the altered girl was following, too.

Just as Weiner reached the entrance to the Vorster place, Vanna dashed forward and cut in front of him.

"Wait," she said. "Don't go in there to make trouble."

"Get out of my way, you phony-faced bitch!"

"Please," she said softly. "You're a troubled man. You aren't in harmony with yourself, let alone with the world around you. Come inside with me, and let me show you how to pray. There's much for you to gain in there. If you'd only open your mind, open your heart — instead of standing there so smug in your hatred, in your drunken unwillingness to see —"

Weiner hit her.

It was a backhand slap across the face. Surgical alteration jobs are fragile, and they aren't meant to be slapped. Vanna fell to her knees, whimpering, and pressed her hands over her face. She still blocked the Martian's way. Weiner drew his foot back as though he was going to kick her, and that was when Reynolds Kirby forgot he was paid to be a diplomat.

Kirby strode forward, caught Weiner by the elbow, swung him around. The Martian was off balance. He clawed at Kirby for support. Kirby struck his hand down, brought a fist up, landed it solidly in Weiner's muscular belly.

Weiner made a small oofing sound and began to rock backward. Kirby had not struck a human being in anger in thirty years, and he did not realize until that moment what a savage pleasure there could be in something so primordial. Adrenalin flooded his body. He hit Weiner again, just below the heart. The Martian, looking very surprised, sagged and went over backward, sprawling in the street, a blank expression on his face.

"Get up," Kirby said, almost dizzy with rage.

Vanna plucked at his sleeve. "Don't hit him again," she murmured. Her metallic lips looked crumpled. Her cheeks glistened with tears. "Please don't hit him any more."

Weiner remained where he was, shaking his head vaguely. A new figure came forward: a small leathery-faced man, in late middle age. The Martian consul. Kirby felt his belly churn with apprehension.

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The consul said, "I'm terribly sorry, Freeman Kirby. He's really been running amok, hasn't he? Well, we'll take jurisdiction now. What he needs is to have some of his own people tell him what a fool he's been."

Kirby stammered, "It was my fault. I lost sight of him. He shouldn't be blamed. He —"

"We understand perfectly Freeman Kirby." The consul smiled benignly, gestured, nodded as three aides came forward and gathered the fallen Weiner into their arms.

Very suddenly the street was empty. Kirby stood, drained and stupefied, in front of the Vorster chapel, and Vanna was with him, and all the others were gone, Weiner vanishing like an ogre in a bad dream. It had not, Kirby thought, been a very successful evening. But now it was over.

Home, now.

An hour and a half would see him in Tortola. A quick, lonely swim in the warm ocean — then half an hour in the Nothing Chamber tomorrow. No, an hour, Kirby decided. It would take that much to undo this night's damage. An hour of disassociation, an hour of drifting on the amniotic tide, sheltered, warm, unbothered by the pressures of the world, an hour of blissful if cowardly escape. Fine. Wonderful.

Vanna said, "Will you come in, now?"

"Into the chapel?"

"Yes. Please."

"It's late. I'll get you back to New York right away. We'll pay for any repairs that — that your face will need. The copter's waiting.

"Let it wait," Vanna said. "Come inside."

"I want to get home."

"Home can wait too. Give me two hours with you, Ron. Just sit and listen to what they have to say in there. Come to the altar with me. You don't have to do anything but listen. It'll relax you, I promise that."

Kirby stared at her distorted, artificial face. Beneath the grotesque eyelids were real eyes — shining, imploring. Why was she so eager? Did they pay a finder's fee of salvation for every lost soul dragged into the Blue Fire? Or could it be, Kirby wondered, that she really and truly believed, that her heart and soul were bound up in this movement, that she was sincere in her conviction that the followers of Vorst would live through eternity, would live to see men ride to the distant stars?

He was so very tired.

He wondered how the security officers of the Secretariat would regard it if a high official

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like himself began to dabble in Vorsterism.

He wondered, too, if he had any career at all left to salvage, after tonight's fiasco with the Martian. What was there to lose? He could rest for a while in there. His head was splitting. Perhaps some esper in there would massage his frontal lobes for a while. Espers tended to be drawn to the Vorster chapels, didn't they?

The place seemed to have a pull. He had made his job his religion, but was that really good enough, he asked himself now?

The sign over the door said:

BROTHERHOOD OF THE IMMANENT RADIANCE
COME YE ALL
YE NOW MAY NEVER DIE
HARMONIZE WITH THE ALL

"Will you?" Vanna said.

"All right," Kirby muttered. "I'm willing. Let's go harmonize with the All."

She took his hand. They stepped through the door. About a dozen people were kneeling in the pews. Up front, the chapel leader was nudging the moderator rods out of the little reactor, and the first faint bluish glow was beginning to suffuse the room. Vanna guided Kirby into the last row. He looked toward the altar. The glow was deepening, casting a strange radiance on the plump, dogged-looking man at the front of the room. Now greenish-white, now purplish, now the Blue Fire of the Vorsters.

The opium of the masses, Kirby thought, and the hackneyed phrase sounded foolishly cynical as it echoed through his brain. What was the Nothing Chamber, after all, but the opium of the elite? And the sniffer palaces, what were they? At least here they went for the mind and soul, not for the body.

"My brothers," said the man at the altar in a soft, fog-smooth voice, "we celebrate the underlying Oneness here. Man and woman, star and stone, tree and bird, all consist of atoms, and those atoms contain particles moving at wondrous speeds. They are the electrons, my brothers. They show us the way to peace —"

Reynolds Kirby bowed his head. He could not bear to look at that glowing reactor, suddenly. There was a throbbing in his skull. He was distantly aware of Vanna beside him, smiling, warm, close.

I'm listening, Kirby thought. *Go on. Tell me! Tell me! I want to hear. God and the almighty electron help me, I want to hear!*

— ROBERT SILVERBERG

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THINK OF A MAN

Think of a man — and think he's much like you —
Who cups like gems in memory's hand the stars
And maybe says: "This one that blazes blue
Shone down — near crisped me! — on the Canis wars.
I was decorated: medal and three scars.
Next came this yellow, Procyon; by its light
I spent some gritty months in desert cars,
Drank up my pay and hoped there'd be no fight.

"And then to Pollux; not so bright, but warm;
Just like the girl I met there — comfort, though,
Can get damned dull. My dress whites were the charm
That kept her, and I shed them; shed her so.
A merchant ticket hauled me, come and go,
A dozen times round Castor and Capella.
Castor's this green one: dazzled on the snow
That slipped me up and cracked my fool patella.

"I thought I liked it dirtside; learned to gamble
The one sure way to win — got paid to deal.
And that got dull. I took a little amble
To this one, arc-blue Regulus, to feel
Once more the thrum and urge of driven steel.
Sudden I hated day-star never changing
And suns at night held all to one round wheel.
I knew for me there'd be no life but ranging."

Think then of such a man, who gems his thought
With Mizar's emerald, Vega's diamond gleam,
Arcturus' topaz: wealth he's fairly bought
With nothing less than heartblood. Let him seem
Grown old, with darting eyes whose corners teem
Wrinkles to laugh like dawn or weep like dew:
Hell-tested, Heaven blest: he lives his dream.
Think such a man. And think he might be you.

— KAREN ANDERSON

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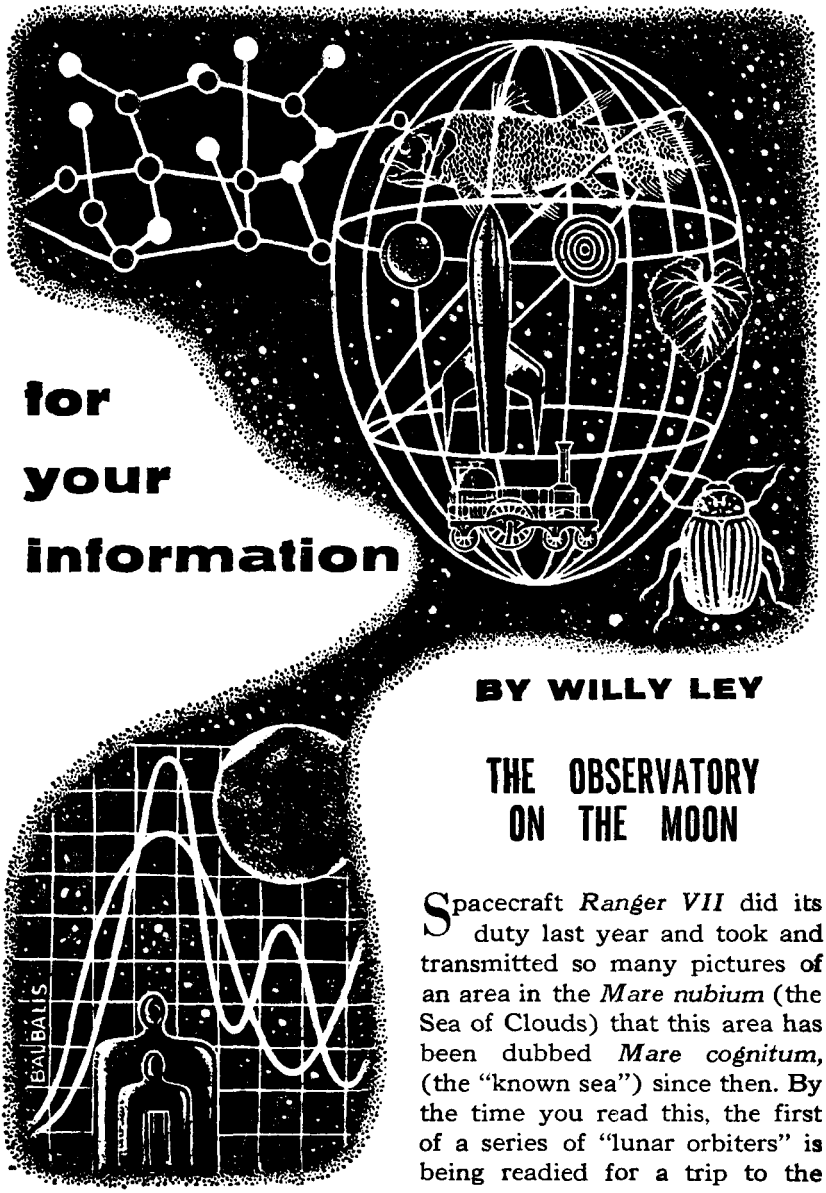

BY WILLY LEY

THE OBSERVATORY ON THE MOON

Spacecraft *Ranger VII* did its duty last year and took and transmitted so many pictures of an area in the *Mare nubium* (the Sea of Clouds) that this area has been dubbed *Mare cognitum,* (the "known sea") since then. By the time you read this, the first of a series of "lunar orbiters" is being readied for a trip to the

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moon. It, and its successors, will go into a tight orbit around the moon for picture-taking purposes with the specific goal of finding a landing area for the Apollo astronauts. Somewhere along the line a *Surveyor* spacecraft will be soft landed on the moon to transmit a panorama of the lunar landscape around the motionless device.

A few years later men will do the actual on-site exploring.

And then?

Everybody is agreed on a number of fundamental thoughts, goals and conclusions. Of course the first landing will be followed by others, there will be a base on the moon—or rather a minimum of two, one speaking Russian, the other English—and there is also agreement that the main purpose of the lunar base will be research: chemistry, crystallography, electronics, metallurgy, biology and last, but by no means least, astronomy.

Building an observatory on the moon will be a curious turnabout. After having done what we could with telescopes, *Ranger* flights, *Surveyor* landings and manned landings to explore the moon, the moon itself will be utilized for further astronomical exploration.

Of course it is difficult to imagine a better location for an astronomical observatory than a place on the lunar surface. Since the atmosphere is negligible (at most of a density of 1/20,000th of ours at sea level) the seeing will be perfect all the time, not only during the two-week night, but also all day long. Only two rather small areas of the sky will not be accessible; namely the area occupied by the sun and its corona and the one occupied by the earth. But any astronomer will know in advance where the sun and the earth are going to be.

Because of the lack of an atmosphere an object just above the horizon can be observed just as well as one near the zenith. And since the moon is a negligible distance from the earth, as cosmic distances go, the fixed stars will be in the customary places, existing charts can, therefore, be used without making any change at all.

To make the picture even more attractive, the moon does not move fast in its orbit (0.6 mile per second) and it needs a whole month to turn on its axis. This means that the apparent motion of fixed stars and of extragalactic objects across the lunar sky is quite slow. Any object can be kept in the field of view for an endless time; we can start dreaming right now about what a 240-hour exposure of the Andromeda galaxy may show.

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The longer you look at all the possible advantages the more it becomes clear that an astronomical observatory on the moon will be something very much worth having. Just for the sake of completeness I would like to add that this is not a new idea to astronomers. The two lunar observers Wilhelm Beer and Heinrich von Madler who had completed a 3-foot chart of the moon in 1834, published a book explaining the features on their chart in 1837. In that book they *included a short section on the advantages of an astronomical observatory on the moon!* If the first lunar observatory is officially opened in 1977—a reasonable estimate—140 years will have gone by between first dream and reality. During the latter part of these fourteen decades astronomy added to itself another branch, namely radio astronomy, something even Beer and von Madler did not dream about.

There is a reason for bringing up radio astronomy even before the discussion is really underway. It is because the type of instrument used may determine the choice of locations for the observatory. Beer and von Madler had said that the lunar observatory should be on the moon's farside, so that earthlight would not interfere. They still thought that the moon had a reasonably dense atmosphere, much less dense than ours, of course, but still dense enough to make the sky light if a strongly luminous body, like the sun or the earth, was overhead. We now know better; what there is of a lunar atmosphere will not produce any optical effects. In fact an observatory using normal telescopes and astronomical cameras should be located on the lunar hemisphere visible from earth for ease in communications.

But when it comes to radio astronomy the earth does interfere; not the planet itself, but the activities of its inhabitants. More and more wave bands have to be utilized for communication of all kinds and the volume of radio transmissions into and from space is bound to increase sharply. Communications satellites will be in action, weather watching satellites will send a steady stream of information to the ground, navigational satellites will broadcast their position when requested by navigators at sea. There will be all kinds of special devices, manned orbiting laboratories and so forth, in various orbits around the earth, all of them broadcasting and receiving. One worried radio astronomer has already gone on record as saying that his special branch of science will be blotted out a decade from now.

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But the other side of the moon is a perfect refuge for radio astronomers, since the bulk of the moon will protect their instruments from all the man-made radio noises so that they will be able to study radio noise coming in from deep space.

Not quite forty years ago somebody in Germany—probably Max Valier, but I am not sure—sold an article on the advantages of a lunar observatory to a German weekly magazine. Since this was an illustrated family magazine the article had to have a picture to go with it and a staff artist was called in to do the job.

The picture showed a magnificently rocky lunar landscape with tall and steep mountains and on one of the mountain tops there was the observatory, with three cupolas of different sizes, and three telescopes showing in the cupola slots, all three looking in the same direction. I'll admit freely that I don't know just what the lunar observatory will look like, but I know it won't look like that illustration.

To begin with it will not be on a mountain top. On earth you build observatories on high mountains to have as much of the troublesome atmosphere as possible below. On the moon the favored site for an observatory would be one where the observer had a clear view down to the horizon in all directions. Since the horizon on the moon is much closer to the observer than on earth this is not a very difficult demand, the center of any large flat-floored crater will do. To an observer in the center of Archimedes, for example, the horizon would appear unmarred since even the ringwall of the crater itself would be below the horizon.

On earth the cupola has the purpose of protecting the expensive instrument from the elements, rain, hail, snow and sometimes wind-blown dust and sand. On the moon protection is needed from the steady infall of micrometeorites, but it probably won't take the shape of the customary cupola.

When it comes to the instrument itself the layman is apt to visualize something large and impressive, possibly a big reflecting telescope like the 80-inch reflector of the Kitt Peak National Observatory not far from Tucson, or at least a 36-inch refractor like that of the Lick Observatory. The answer to such ideas is a plain "no" and the reason is weight. But it may be useful to explain the two main types of optical telescopes first.

The instrument astronomers call a refractor is a very large spyglass, a tube holding two

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lenses or rather lens systems. The purpose of the tube is two-fold; it carries the main lens at its outer end and it also keeps out stray light. Since the main lens is heavy the tube carrying it must be very strong and is heavy too, for that reason.

Things are a little bit better in the case of the reflector where the main optical element is a carefully ground mirror. The mirror is located at the lower end of the tube. Since all large modern reflectors are housed in cupolas the tube does not need to keep out stray light and is, therefore, usually a lattice construction and no longer a tube in the proper meaning of the word.

The largest refractor ever built —with one exception that will be discussed below—is the 40-inch refractor of the Yerkes observatory, next largest is the 36-inch of the Lick Observatory. The 32.7-inch of the Paris Observatory at Meudon holds third place.

Largest of the reflectors is, of course, the 200-inch on Palomar Mountain, with the 120-inch of Lick Observatory and the 100-inch on Mt. Wilson in second and third places.

The customary question whether a refractor or a reflector is "better" has no short answer;

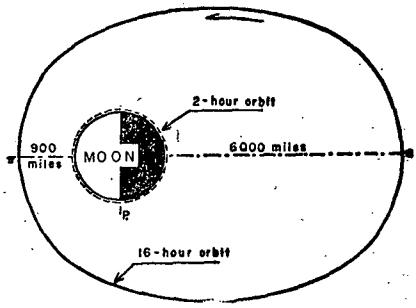

Fig. 1. Two possible orbits for communication satellites around the moon.

it would be like asking whether a Diesel engine or a gasoline engine is "better". It depends on the job, plus other factors. At the present state of technology we can build 100-inch, 120-inch reflectors, but we could not build refractors with corresponding lens diameters. The point to keep in mind, in general, as well as with specific reference to the lunar observatory, is that a larger telescope does not only produce a larger magnification. The main thing is that a larger lens, or mirror, has a larger light gathering power and can therefore reveal the existence of very faint objects, as for example very distant galaxies. In layman's language this is usually expressed by saying that the bigger telescope can "see farther" which is correct only insofar that a very faint galaxy is likely to be much farther away than a fairly bright galaxy.

The light gathering ability and the resolution (alias magnifica-

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tion) do not increase at the same rate as the diameter of the lens or mirror increases. The resolution increases in proportion to the diameter. Hence the 200-inch reflector on Palomar Mountain has a resolution twice as good as the 100-inch on Mt. Wilson. But the light gathering ability increases with the square of the diameter. Therefore the 200-inch can gather four times as much light as the 100-inch. Hence the targets of the 200-inch, and of the 100-inch too, are usually distant galaxies. For observing Jupiter, which is bright enough, a much smaller instrument is very nearly as good as these giants.

But now I cannot hold back any more on the problem of weight and I feel obliged to give advance warning that things will look quite bleak for a few paragraphs to come.

To begin with a historical example: Lord Rosse's "giant of Parsonstown" a 72-inch reflector, had a total weight of 36,000 pounds. Its tube, made of sturdy wood and strengthened with iron hoops, alone weighed 15,000 pounds. Oh well, that was a century ago. We can build lighter now. Well, maybe we build better, but not lighter. The Kitt Peak 80-inch reflector has an overall weight of 70 tons, without the foundation, that is. Lick's 120-inch is estimated to weigh 40 tons (just the instrument and mounting) while the Palomar 200-inch has a weight of 150 tons, the mirror alone weighs 14½ tons — the glass disk before grinding weighed in at 20 tons.

Nor can any comfort be derived from the weights of the bigger radio telescopes. Harvard's George R. Agassiz radio telescope near Cambridge has a 60-foot dish weighing 8,000 pounds (being of extra light construction) but the total weight is 103,600 pounds. The Navy's 84-foot radio telescope of Maryland Point Observatory has a total weight of 170,000 pounds, the dish alone weighs 15,000 pounds. And Great Britain's Jordell Bank radio telescope is not only the biggest fully steerable radio telescope in existence, it is also exceptionally heavy: the 250-foot dish weighs 750 tons and the whole moveable structure adds up to 2,000 tons.

Of course I am well aware of the fact that under the moon's lesser gravity less metal will provide the same structural strength. A radio telescope of the same dimensions as the one at Jodrell Bank might have 350 tons earth weight (and weigh only 60 tons on the moon), but this weight would have to be lifted out of the atmosphere against the earth's gravitational pull and would then have to be soft-landed on the

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moon. And while a radio telescope could still be transported in pieces that could be designed with the weight carrying capacity of the then existing rockets in mind, any optical telescope has one piece that has to be transported as a whole: the mirror in the case of a reflector and the main lens in the case of a refractor. And the weight of a mirror or lens could not be reduced very much, even for use on the moon.

Are we then limited to 8-inch and 10-inch telescopes for the lunar observatory? Not necessarily, because at one time in the past a refractor of an even larger size than the 40-inch of Yerkes Observatory was built along unconventional lines. It is usually not mentioned in astronomical books for two reasons: it never did any scientific work and it was dismantled only a few years after it had been built.

It was the 49.2-inch refractor that could be seen at the Paris Universal Exhibition of 1900. At the time the French considered themselves the leading nation in the manufacture of precision optical instruments. Of course when this claim was made Americans tended to mutter "Alvin G. Clark" and Germans said "Carl Zeiss", but these old rivalries are by now a thing of the past. At any event the *Palais de l'Optique* at the Paris Exhibition was to have a very large telescope. Since the biggest instrument up to that time had been Lord Rosse's reflector — inactive since 1878 — a three-meter (circa 110-inch) reflector was considered first, but facilities for casting a glass disk of such size simply did not exist, not in France and not anywhere else on our planet. But an 80-inch disk for a mirror could be cast, and a 50-inch disk for a lens.

These two facilities were combined for the 49.2-inch refractor. Since the main lens was expected to weigh close to a ton no attempts at normal mounting were made. The lens was mounted at the front end of a 190-foot steel tube which was resting on the ground horizontally. The eye piece and plate holders for photographic plates, 30-inches square, were in a small wheeled cart connected to the steel tube by bellows like those of an oversized camera. For focussing purposes this cart could be moved as much as five feet, its wheel resting on a short section of narrow gauge railroad track. In order to reflect starlight into the telescope a 12-inch thick plane mirror, with a diameter of 79 inches, was set into a vertical fork mounting.

The disappointing performance of the instrument was not due to

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poor optics but had other reasons. No provision had been made for ventilating the steel tube properly so that the air inside the tube was probably quite humid. But the main reason was the location of the instrument; from the point of view of the observing astronomer it was undoubtedly the worst location possible. It was not many feet above sea level, on fair grounds where hundreds of searchlights were operated on and off, and near a very large city which must have been much smokier in 1900 than it is now.

Still, this type of telescope might be the thing to use on the moon. The heaviest part that would have to be transported would be the main lens, and if we have a 30-inch lens in mind that means a weight (uncrated) of around 750 pounds. The plane mirror for reflecting starlight into the telescope could be much lighter than the one used in 1900 and would weigh less than the main lens. Instead of using a horizontal 30-inch steel tube one could drill a horizontal, or even slanting, 30-inch tube through a convenient rock formation. Housing the eye piece and photographic equipment in a separate car would solve the problem of breathing for the observer. With any conventional telescope one would have the problem of either enclosing the whole telescope in an underground room with breathable air, or else exposing the whole telescope to the vacuum of the lunar surface and having the observer in a spacesuit. Neither sounds like an optimal solution, but if a telescope of that type were used, the tunnel in the rock could be a vacuum while the observers are in their enclosed cabin with an airlock to the interior of the lunar base.

Direct observation, which was the rule in the past, is now pretty much the exception and used mainly for work on other planets. Practically everything else is photographic work and if an astronomical camera is used, it can well be operated by a man in a spacesuit since his main jobs would be to aim the camera and to change plates. And astronomical cameras, fortunately, are much lighter than astronomical telescopes. Harvard's "Super Schmidt" meteor camera at Las Cruces is an 18-inch camera with a total weight of 5,000 pounds. Redesigning such a camera for use on the moon could eliminate a good percentage of this weight, possibly as much as 50 percent. It must also be kept in mind that so far nobody had *tried* to design light large scale astronomical equipment, all the efforts to eliminate weight have

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gone into small portable telescopes.

But how about reflectors with a lightweight mirror? The mirror does not have to be glass, as is the case with the 200-inch and its smaller rivals. The reason why instrument makers went from Sir William Herschel's speculum metal mirrors to glass mirrors which were silvered (and later aluminized) was purely practical. The chemical action of the atmosphere slowly reduces the reflectivity of the mirror. Partly it is straight oxidation, partly the action of gases which are not frequent in the atmosphere, but often present, for example sulphur dioxide that is released not only by industry but by volcanoes, too. If a speculum metal mirror grew dim, it meant repolishing, which is at the very least tedious work. If a silvered or aluminized glass mirror grows dim, the glass disk is simply resilvered. But on the moon there is no atmosphere which causes trouble via unwanted chemical reactions.

Could we produce an all aluminum mirror of little weight and with a diameter of, say, 50 inches? Of course lightweight parabolic mirrors of a diameter of 4 to 6 feet exist for various purposes, but they are not accurate enough for astronomical use. Again since no work in this direction has been carried out, we don't know whether it can be done or not. It would be a development project which might not even be very expensive.

Before we look at the backside of the moon and the radio telescope station we might think quickly about a likely location for the visual observatory. My own suggestion is the large half crater with the beautiful name of *Sinus iridum* (Bay of Rainbows) at the northern edge of the *Mare imbrium*. There the horizon would be as smooth as it is on earth a hundred miles from the nearest shoreline at sea. Moreover, the ground would not get too hot. Most people "know" that the noonday temperature on the moon is near the boiling point of water. This information is correct, but it holds true only near the lunar equator. In the area of *Sinus iridum* the noonday temperature of the ground will be around 80° Fahrenheit. The night temperature will be as low as anywhere else, an estimated 200° Fahrenheit below zero, but at least the daytime temperatures do not climb as high as they do at the equator.

An observatory in the center of the *Sinus iridum* would have a location which would correspond more or less to an observa-

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tory near Paris or Vienna as far as the astronomical view is concerned. It would be excellent for the northern stars, but would not do so well for the southern stars. The lunar equivalent of a Cape Town Observatory would be located in Clavius. It looks as if we had a choice between two observatories in two different locations or of braving the daytime heat of the equator, which would not be too difficult to beat by digging in. But two observatories seem to be a better answer just because of the workload that will indubitably descend on them. Instrument time is tightly apportioned in terrestrial observatories, and trying to observe the whole sky from just one observatory is likely to demand the impossible.

Let us now consider the radio telescope on the farside of the moon. Like its optical counterpart it should be well away from the lunar equator and for the same reason. And as for its construction we have a "prototype" on earth right now: the Arecibo radio telescope which has the largest antenna dish of all, namely 1,000 feet in diameter, and weighs less per square foot than any other radio telescope, mainly because it is also, in a manner of speaking, lying flat on the ground.

In its construction a natural hollow in the ground was utilized. It was not "lined with wiremesh" as one can read occasionally, but the wire mesh was suspended across the hollow in such a manner that it has the proper curved surface. The wire mesh is supported by cables to which ballast bars are tied. The ballast bars, by their weight, change the curve which a suspended cable would form naturally into a segment of a sphere.

For those who are surprised at the mention of wire mesh for the "reflector" I hasten to explain that a reflector for radio waves does not have to be a continuous surface, even though some of the smaller dishes have been made of sheet metal. It is all a question of the wavelength you are dealing with. The reflecting mirror of an optical telescope would still be optically perfect, even if it had millions of tiny holes, provided that the size of each hole is less than 1/20th of the wavelength reflected. Since the waves of visible light are so short, this is only a point of theoretical information. But if you deal with 20 centimeter (circa 8 inch) radiowaves, holes of 1 centimeter in diameter are permissible, hence wire mesh can be used. Theoretically the spaces between the wires in the Arecibo telescope would have to

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be smaller than 5 centimeters and the deviation of the shape of the net has the same limit. For the radio waves to be received this is a "smooth" mirror. In reality the spacing of the wires at Arecibo is only 1.3 centimeters and the error in shape is at most 2.5 centimeters.

Incidentally the Arecibo telescope can be operated as a pure radio telescope, just receiving waves that come from space, or else it can be operated as a radar telescope, sending out pulses of radio waves and catching their reflections. The structure where the radio waves are received and the radar impulses are transmitted is suspended on cables 472 feet above the large bowl. Of course a radio telescope of this type is not as versatile as the fully steerable Jodrell Bank equipment, but for weight reasons the radio telescope on the moon will have to be of that type.

One more problem needs to be discussed.

The distance between the two observatories is likely to be on the order of 2,000 miles. They have to communicate with each other and possibly also with some research outposts in other distant areas of the moon. The most practicable and also the cheapest way of doing it will be by moon-orbiting communications satellite. But because the moon's gravitational field is weak, a moon-orbiting satellite travels slowly. A satellite needing two hours to complete one orbit would be 1,075 miles above sea level in the case of the earth, the two-hour orbit for the moon is only 90 miles above its surface. And because of the moon's curvature it will be visible only along a rather narrow lane on the ground. It would help a little if the communications satellite were placed in a polar orbit. But a much larger orbit (see Fig. 1) would be preferable.

A communications satellite in a 16-hour orbit would be visible, and therefore useable, for several hours at a time — if it is visible from both observatories simultaneously there could be "live" communication. Otherwise storage tapes would have to be used.

But a satellite in such an orbit would move much faster in the "periselenion" (closest to the moon) sector of its orbit than in the opposite, the "aposelenion" sector. This fact can be utilized in the following manner: the orbit of the communications satellite could be tilted in such a way that aposelenion is vertically above the half way point of the line connecting the two observatories. In that case the communications satellite would be above

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the horizon for both observatories for about 10 hours and would be below the horizon for one of them, or both, for only 6 hours.

The astronomical observatory on the moon about which Beer and von Madler dreamed more than a century ago will become reality long before the current century draws to a close. But it will look quite differently from the terrestrial shape these two observers probably had in mind.

—WILLY LEY

OBSERVATORY ON THE MOON

by Donald H. Menzel

My good friend, Willy Ley, has pointed out the usefulness of a manned observatory on the surface of the moon. We agree completely on the excellence of a lunar site, with clear, black skies by day as well as by night. The stars stand steady and untwinkling in this airless, waterless world.

I do not agree with Willy Ley, however, concerning the types of telescopes to be used in this observatory, the operation of such telescopes, their location on the surface of the moon, or the specific programs that one would use the instruments for.

First of all, with reference to the location of a radio telescope, I am not altogether convinced that the best location would be on the far side of the moon. True, such a location would be free from man-made radio noise of terrestrial origin. But this is not likely to be particularly troublesome. One must not overlook the advantages of direct communication from earth to moon that would result from an observatory located on the side turned toward the earth. In any event, we must weigh the disadvantages of having the earth available to help us in certain radio experiments. Today astronomers find the moon a big help, as it moves over this or that radio source, hiding it from view. The earth could be similarly used for a moon-based telescope. It could give us important information, for example, about the spatial distribution of radio sources on the sun or within the solar atmosphere, during those times when the earth eclipses the sun.

In my opinion, the advantages of an optical observatory on the moon are even more spectacular than those for radio astronomy. Here, Willy Ley and I concur that the observatory should be located on the earthward hemisphere.

The moon's orbital velocity is irrelevant. We correct for the moon's rotation, slow though it

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is, by means of telescopic controls similar to those on earth True, the long lunar day (or night), lasting 14 earthly days, would permit long exposures on certain faint objects. But the most obvious advantage to a moon-based observatory would be our ability to study the structure of the universe in light of the wavelengths that fail to penetrate the earth's atmosphere, light or energy that we would describe as far ultraviolet, or even X-rays. For such a purpose man clearly needs a reflecting telescope, not a refractor. Glass absorbs the ultraviolet light — hence no one would ever consider building a major refractor, as Willy Ley suggests.

I disagree completely when he states that today we cannot build lighter telescopes, even though we may build better ones. The basic problem is not the gravitational field of the earth, although that enters indirectly, but the gravitational field of the moon where the instrument ultimately has to operate. We have built mirrors that are much lighter than the solid glass mirrors used for the Palomar giant. A relatively thin layer of quartz melted on top of a much thicker, but stable, layer of foamed quartz gives a very rigid mirror. The weight of the mirror is a small part of the weight of the telescope as a whole. We could most certainly send to the moon a 100-inch mirror or larger. But in the low gravitational field of the moon, the mirror and its supporting telescope will be subject to only one-sixth of the gravitational field of the earth. Distortions will be correspondingly less and easier to control. The telescope can be much lighter in consequence.

Willy Ley seems to be concerned that the astronomer might experience difficulties operating in a vacuum. As a matter of fact, electronic receivers would carry the image from the telescope itself to underground, pressured chambers where the observer could operate in comfort. Remote control would enable him to perform all of the necessary telescope operations. In this way, we should have the enormous advantage of high resolution of a large telescope, in addition to its light-gathering power.

I might mention here that the telescope I have described could not possibly function for X-ray astronomy. The X-ray telescope would look something like a giant insect's eye, an enormous honeycomb of tiny cells turning around in space to measure the intensities of cosmic X-rays coming from different directions of space. Electronic detectors would record the information. Such de-

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tectors have already been sent up into space by Dr. Herbert Friedman and his collaborators at the U. S. Naval laboratory. There they have detected X-rays emitted by various kinds of astronomical bodies. Such studies are extremely important.

Willy Ley suggests that temperature considerations would indicate a preference for the location of either a radio or optical observatory at some distance from the lunar equator. The temperature of the equipment would, beyond doubt, get pretty high near the equator, if the instrument were not shielded in some way or other. I think that a very simple screen could be devised to put the instrument completely in shadow, to protect it from the sun's rays. Alternatively, one could certainly cool the instrument by circulating some fluid through it, as we do today in many industrial plants.

However, if one decides to move away from the equator, for one reason or another I should most certainly recommend that the first lunar telescope be placed in the southern hemisphere, not in the northern. This is because the most interesting and significant part of our stellar universe, which such a telescope would study, lies in the southern hemisphere. Certainly *Sinus Iridum* would be a good location for the *second* moon-based optical telescope.

I question very much whether the first lunar radio telescope should resemble in any way the Arecibo horizontal dish. The low gravity of the moon should make particularly desirable the construction of at least a partially steerable dish and that is what I would most certainly recommend. In any event, such a permanent dish, located far from the equator, would not be able to study the sun or the planets of the solar system. Indeed, the choice of Arecibo, Puerto Rico, as the site for the big dish was largely dictated by astronomical considerations.

Finally, I should most certainly recommend that, if a radio telescope is to be built on the moon, it be located close to the optical telescope. I mention this not only to simplify the communication system, whose complexity Willy Ley elaborates, but to simplify the whole problem of logistics of a moon-based scientific station.

However, despite our disagreement on details, Willy Ley and I agree completely that such an observatory will become an eventuality within the next three or four decades. I wish, moreover, to emphasize the knowledge to be gained from such an observatory and associated scien-

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tific programs will contribute greatly to our understanding of the origin and ultimate destiny of our universe.

—DONALD H. MENZEL

AN EYE FOR SELENE

by Robert S. Richardson

There is one aspect to this business of putting an observatory on the Moon that has me worried. What are the astronomers on Luna going to use as a subject for conversation?

Astronomers are not the sort of people who have a large fund of small talk. They consist mostly of grim, taciturn individuals with a gloomy outlook on life. Conversation often languishes when they gather around the dinner table at their mountaintop observatory. But there is one subject that always interests them: *What is the seeing?*

The seeing, of course, refers to the appearance of the image in the telescope as affected by atmospheric conditions. If the seeing is bad they grumble about their luck and swear that somebody up there hates them. If the seeing is good they perk up momentarily. Now on the Moon they will always have "Seeing 10" — perfect! In fact, there won't really be any seeing. What a horrible situation. A bunch of astronomers with nothing to complain about!

It is impossible for a person without telescopic experience to appreciate the extent that astronomers are handicapped by the atmosphere. A physicist or chemist works in the laboratory where conditions are under their control. But an astronomer is completely at the mercy of his environment.

It is not just a clear sky that he needs. After a storm the sky may be crystal clear. But the air is so turbulent the stars are twinkling like mad. Which means that in the telescope they will be jumping all over the place. Sometimes a star will explode right in your eye! And the bigger the telescope the more adversely is it affected by seeing. There are scarcely two dozen nights in the year when a telescope like the 200-inch Hale can approach the full extent of its optical power. (Curiously enough the seeing is usually improved by smoke and haze. Possibly the smoke particles reduce turbulence by loading the atmosphere. E. E. Barnard said the best view of Venus he ever had was when the sky over the Lick Observatory was brown from a forest fire.)

Even on those all too rare nights when the seeing is good the atmosphere is still an obsta-

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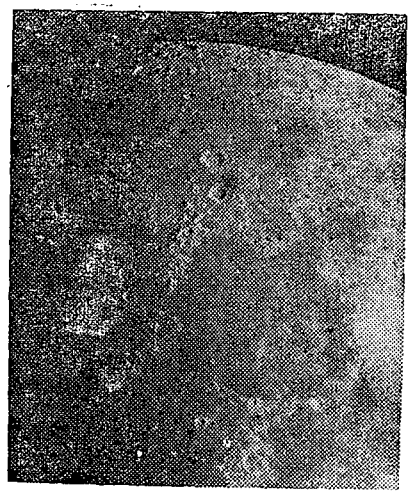
cle. For it prevents about 30 per cent of the light of a star from reaching the telescope. Worse still . . . this is the 30 per cent that contains some of the most valuable information about the sun and stars. Beginning in the ultraviolet at wavelength 3200A, the spectrum begins to weaken and at 2950A is gone completely, due to absorption in the ozonosphere. Further absorption due to molecules and atoms of oxygen and nitrogen continues into the X-ray region. Only recently has this "rocket ultraviolet" region become accessible to exploration.

But on the airless surface of the Moon we would get *all* the radiation of the celestial bodies. The stars would be hard unwinking points of light set in a sky never stained by clouds.

Exposure times on stellar spectra should be drastically reduced. When the seeing is bad the image of your star is dancing around on the polished face of the slit *jaws* instead of going into the *slit* where you want it. Direct photography will also be benefited. The light in a star image will be concentrated in a tiny point on the emulsion instead of being spread over an area to form a spot.

For work on the Moon the best type of optical telescope would seem to be the reflector,



Approximate position of site selected for the lunar base by Air Force Cambridge Research Laboratories. It is near the center of the lunar face in the highlands just south of the HYGINUS RILLE, near the crater AGRIPPA at 8° E long., 5° N lat. (crater nearest bottom of photo). (notice that E and W here do not conform to the usual convention on lunar maps.) This would not necessarily be the site of a lunar observatory.

as the reflector or mirror type of telescope can be made so much larger than the refractor or lens type. Also, the reflector is such a versatile sort of instrument compared with the refractor. Furthermore, a refractor would bring you right back to all the disadvantages of observing through the atmosphere in the violet and ultraviolet, since glass begins to absorb strongly around 3400A. All work in the ultraviolet has to be done with mirror systems and concave grating spectrographs.

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The trouble with a refractor is that you can't do anything but *look* through it. But astronomers never look into a telescope any more except to focus it and make sure they're set on the right object. There are very few astronomers today who are experienced visual observers, of the caliber of such greats as Schiaparelli and Antoniadi and Lowell. The only ones I can think of at the moment are Clyde Tombaugh, the discoverer of Pluto, and Audouin Dollfus of the Meudon Observatory.

LOCATION OF THE LUNAR BASE

At least six different people have picked out as many different sites for the lunar base. The most extensive investigation on this important problem has been made by John W. Salisbury and Charles F. Campen, Jr., of the Air Force Cambridge Research Laboratories: (AFCRL 870, GRD Research Notes No. 70, Project 7698, October, 1961.) After a review of all the material they recommend that "location of the lunar base in the highlands would be permissible because the discontinuous layers of the rubble, rock flour and meteoric material overlying the fractured basement rock would not present a collapse hazard. The maria, on the other hand, are considered to bear near-surface cavities probably twice the size of those predicted under the volcanic theory. This added collapse hazard, when compared to the negligible collapse hazard of the highlands, makes the highlands a more favorable site for base location, and such a site is advocated in this report." In particular ". . . considering the probable lunar structure, surface characteristics and natural resources, it appears that the lunar base should be located in the highlands near a rille, but not near a recent large crater such as Copernicus or Kepler. Also, bearing in mind astronomical, guidance and propulsion requirements, for a base near the equator and in the center of the lunar face, a location in the highlands just south of the Hyginus Rille, near the crater Agrippa (8°E long., 5°N lat.), is provisionally proposed for the lunar base."

THE ASTRONOMICAL OBSERVATORIES

When it comes to making astronomical observations on the Moon we are reminded of the famous statement Lincoln made about establishing confidence with the public. At one of the poles of the Moon you can observe half the stars all of the

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time; at the lunar equator you can observe all of the stars half of the time; but there is no place on the Moon where you can observe all of the stars all of the time. One thing we can say: it is absolutely essential to have two lunar observatories located 180° apart.

As seen from the north pole of the Moon the stars would appear to move in circles around a point in the zenith near the faint star 36 Draconis, which for want of a better object will have to serve as the North Star of the Moon. For the north polar observatory the astronomers would never be able to study stars south of the ecliptic such as Sirius, Antares or Rigel. At the south lunar pole the stars would circle around a point at the zenith near the 4th magnitude star Delta Mensae. The South Star would probably be Canopus, the next brightest star to Sirius, although it is about 15° from the south celestial pole. From the south polar observatory the astronomers would never be able to study stars north of the ecliptic such as Capella, Vega or Arcturus. From either observatory the Sun, Earth and planets would always be near the horizon and only visible intermittently.

If the two observatories were located 180° apart along the lunar equator, each would see half the celestial sphere at any instant. As on the Earth, the stars would rise in the east and set in the west, only their diurnal motion would be much slower, the Moon requiring 27.32 days to make a complete rotation relative to the stars. The Earth, Sun and planets would pass close to the zenith. The Sun would move even more deliberately than the stars, taking nearly 15 days to pass across the sky and set below the western horizon. To a casual observer the Earth would be a huge bluish globe hanging nearly motionless in the sky, although careful observation would show that it swings through an angle of about 8° to the east and to the west, and over a total distance of about 13° in a north-south direction.

Although the Earth would scarcely seem to move relative to the lunar landscape, a few hours' watching would reveal that it is moving fairly rapidly relative to the stars, passing over an angular distance equal to its width in 4 hours. This apparent motion of the Earth, of course, is due to the revolution of the Moon around it.

If for some reason it is desirable to have the Earth in view of both observatories at all times they should be located on the equator between longitudes 82°E

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and 82°W. But it would probably be advantageous to have a radio telescope located on the far side of the Moon, where it would be shielded from man-made interference.

THE CHANGING STARS

The position of a star on the celestial sphere is designated by its right ascension and declination. The right ascensions and declinations of the stars change continually owing to a conical motion of the Earth's axis in space called precession. The direction of the north celestial pole is not fixed but describes a circle of 23°.5 in radius in a period of 26,000 years. Right now the north celestial pole is near Alpha Ursae Minoris, the star at the end of the handle of the Little Dipper. But by A.D. 7500 the direction of the north pole will have shifted so that Alpha Cephei will be our Polaris, and around A.D. 14,000 this distinction will fall to the bright star Vega. This precessional motion of the Earth is so slow that it only needs to be taken into account in rather-precise work. If you wanted to set on a star tonight, and you only had its position for 1940, you could probably find it without bothering to bring its right ascension and declination up to date.

But not on the Moon you couldn't. The axis of the Moon also describes a circle in space with a radius of only 1°.5, instead of 23°.5 as in the case of the Earth. But the lunar axis precesses much faster, making a revolution in 18½ years instead of 26,000 years. As a result, lunar right ascensions would change at a terrific rate. There would be no trouble in calculating them as the problem is thoroughly understood. It would just mean a little more work for the staff at the Naval Observatory.

A lunar astronomical observatory has a tremendous potential. We have only touched upon a few of its major advantages. Now if the lunar astronomers can just find something to talk about . . .

—ROBERT S. RICHARDSON

When we meet the races whose planets orbit the hundred billion suns of the galaxy, they may be strange in body and chemistry — but what will their minds be like? Read

THE ALIEN PSYCHE

by Tom Purdom

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DEVIL CAR

by ROGER ZELAZNY

The machine was built for one deadly mission—a war against its own kind!

Murdock sped across the Great Western Road Plain.

High above him the sun was a fiery yo-yo as he took the innumerable hillocks and rises of the Plain at better than a hundred-sixty miles an hour. He did not slow for anything, and Jenny's hidden eyes spotted all the rocks and potholes before they came to them, and she carefully adjusted their course, sometimes without his even detecting the subtle movements of the steering column beneath his hands.

Even through the dark-tinted windshield and the thick goggles he wore, the glare from the fused Plain burnt into his eyes, so that at times it seemed as if he were steering a very fast boat through night, beneath a brilliant alien moon, and that he was cutting his way across a lake of silver fire. Tall dust waves rose in his wake, hung in the air, and after a time settled once more.

"You are wearing yourself out," said the radio, "sitting there clutching the wheel that way, squinting ahead. Why don't you try to get some rest? Let me fog the shields. Go to sleep and leave the driving to me."

"No," he said. "I want it this way."

"All right," said Jenny. "I just thought I would ask."

"Thanks."

About a minute later the radio began playing — it was a soft, stringy sort of music.

"Cut that out!"

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"Sorry, boss. Thought it might relax you."

"When I need relaxing, *I'll* tell *you*."

"Check, Sam. Sorry."

The silence seemed oppressive after its brief interruption. She was a good car though Murdock knew that. She was always concerned with his welfare, and she was anxious to get on with his quest.

She was made to look like a carefree Swinger sedan: bright red, gaudy, fast. But there were rockets under the bulges of her hood, and two fifty-caliber muzzles lurked just out of sight in the recesses beneath her headlamps; she wore a belt of five and ten-second timed grenades across her belly; and in her trunk was a spray-tank containing a highly volatile naphthalic. . . . .For his Jenny was a specially designed deathcar, built for him by the Archengineer of the Geeyem Dynasty, far to the East, and all the cunning of that great artificer had gone into her construction.

"We'll find it this time, Jenny," he said, "and I didn't mean to snap at you like I did."

"That's all right, Sam," said the delicate voice. "I am programmed to understand you."

They roared on across the Great Plain and the sun fell away to the west. All night and all day they had searched, and Murdock was tired. The last Fuel Stop/Rest Stop Fortress seemed so long ago, so far back . . .

Murdock leaned forward and his eyes closed.

The windows slowly darkened into complete opacity. The seat belt crept higher and drew him back away from the wheel. Then the seat gradually leaned backwards until he was reclining on a level plane. The heater came on as the night approached, later.

The seat shook him awake a little before five in the morning.

"Wake up, Sam! Wake up!"

"What is it?" he mumbled.

"I picked up a broadcast twenty minutes ago. There was a recent car-raid out this way. I changed course immediately, and we are almost there."

"Why didn't you get me up right away?"

"You needed the sleep, and there was nothing you could do but get tense and nervous."

"Okay, you're probably right. Tell me about the raid."

"Six vehicles, proceeding westward, were apparently ambushed by an undetermined number of wild cars sometime last night. The Patrol Copter was reporting it from above the scene and I listened in. All the vehicles were

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stripped and drained and their brains were smashed, and their passengers were all apparently killed too. There were no signs of movement."

"How far is it now?"

"Another two or three minutes."

The windshields came clear once more, and Murdock stared as far ahead throuh the night as the powerful lamps could cut.

"I see something," he said, after a few moments.

"This is the place," said Jenny, and she began to slow down.

They drew up beside the ravaged cars. His seat belt unsnapped and the door sprang open on his side.

"Circle around, Jenny," he said, "and look for heat tracks. I won't be long."

The door slammed and Jenny moved away from him. He snapped on his pocket torch and moved toward the wrecked vehicles.

The Plain was like a sand-strewn dance floor — hard and gritty — beneath his feet. There were many skid-marks, and a spaghetti-work of tire tracks lay all about the area.

A dead man sat behind the wheel of the first car. His neck was obviously broken. The smashed watch on his wrist said 2:24. There were three persons — two women and a young man — lying about forty feet away. They had been run down as they tried to flee from their assaulted vehicles.

Murdock moved on, inspected the others. All six cars were upright. Most of the damage was to their bodies. The tires and wheels had been removed from all of them, as well as essential portions of their engines; the gas tanks stood open, siphoned empty; the spare tires were gone from the sprung trunks. There were no living passengers.

Jenny pulled up beside him and her door opened.

"Sam," she said, "pull the brain leads on that blue car, the third one back. It's still drawing some energy from an auxiliary battery, and I can hear it broadcasting."

"Okay."

Murdock went back and tore the leads free. He returned to Jenny and climbed into the driver's seat.

"Did you find anything?"

"Some traces, heading northwest."

"Follow them."

The door slammed and Jenny turned in that direction.

They drove for about five minutes in silence. Then Jenny said: "There were eight cars in that convoy."

"What?"

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"I just heard it on the news. Apparently two of the cars communicated with the wild ones on an off-band. They threw in with them. They gave away their location and turned on the others at the time of the attack."

"What about their passengers?"

"They probably monoed them before they joined the pack."

Murdock lit a cigarette, his hands shaking.

"Jenny, what makes a car run wild?" he asked. "Never knowing where it will get its next fueling — or being sure of finding spare parts for its auto-repair unit? Why do they do it?"

"I do not know, Sam. I have never thought about it."

"Ten years ago the Devil Car, their leader, killed my brother in a raid on his Gas Fortress," said Murdock, "and I've hunted that black Caddy ever since. I've searched for it from the air and I've searched on foot. I've used other cars. I've carried heat trackers and missiles. I even laid mines. But always it's been too fast or too smart or too strong for me. Then I had you built."

"I knew you hated it very much. I always wondered why," Jenny said.

Murdock drew on his cigarette.

"I had you specially programmed and armored and armed to be the toughest, fastest, smartest thing on wheels, Jenny. You're the Scarlet Lady. You're the one car can take the Caddy and his whole pack. You've got fangs and claws of the kind they've never met before. This time I'm going to get them."

"You could have stayed home, Sam, and let me do the hunting."

"No. I know I could have, but I want to be there. I want to give the orders, to press some of the buttons myself, to watch that Devil Car burn away to a metal skeleton. How many people, how many cars has it smashed? We've lost count. I've got to get it, Jenny!"

"I'll find it for you, Sam."

They sped on, at around two hundred miles an hour.

"How's the fuel level, Jenny?"

"Plenty there, and I have not yet drawn upon the auxiliary tanks. Do not worry."

"— The track is getting stronger," she added.

"Good. How's the weapons system?"

"Red light, all around. Ready to go."

Murdock snubbed out his cigarette and lit another.

". . . Some of them carry dead people strapped inside," said Murdock, "so they'll look like

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decent cars with passengers. The black Caddy does it all the time, and it changes them pretty regularly. It keeps its interior refrigerated — so they'll last."

"You know a lot about it, Sam."

"It fooled my brother with phoney passengers and phoney plates. Got him to open his Gas Fortress to it that way. Then the whole pack attacked. It's painted itself red and green and blue and white, on different occasions, but it always goes back to black, sooner or later. It doesn't like yellow or brown or two-tone. I've a list of almost every phoney plate it's ever used. It's even driven the big freeways right into towns and fueled up at regular gas stops. They often get its number as it tears away from them, just as the attendant goes up on the driver's side for his money. It can fake dozens of human voices. They can never catch it afterwards though, because it's souped itself up too well. It always makes it back here to the Plain and loses them. It's even raided used car lots —"

Jenny turned sharply in her course.

"Sam! The trail is quite strong now. *This* way! It goes off in the direction of those mountains.

"Follow!" said Murdock.

For a long time then Murdock was silent. The first inklings of morning began in the east. The pale morning star was a white thumbtack on a blueboard behind them. They began to climb a gentle slope.

"Get it, Jenny. Go get it," urged Murdock.

"I think we will," she said.

The angle of the slope increased. Jenny slowed her pace to match the terrain, which was becoming somewhat bumpy.

"What's the matter?" asked Murdock.

"It's harder going here," she said, "also, the trail is getting more difficult to follow."

"Why is that?"

"There is still a lot of background radiation in these parts," she told him, "and it is throwing off my tracking system."

"Keep trying, Jenny."

"The track seems to go straight toward the mountains."

"Follow it, follow it!"

They slowed some more.

"I am all fouled up now, Sam," she said. "I have just lost the trail."

"It must have a stronghold somewhere around here — a cave or something like that — where it can be sheltered overhead. It's the only way it could have escaped aerial detection all these years."

"What should I do?"

"Go as far forward as you can

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and scan for low openings in the rock. Be wary. Be ready to attack in an instant."

They climbed into the low foothills. Jenny's aerial rose high into the air, and the moths of steel cheesecloth unfolded their wings and danced and spun about it, bright there in the morning light.

"Nothing yet," said Jenny, "and we can't go much further."

"Then we'll cruise along the length of it and keep scanning."

"To the right or to the left?"

"I don't know. Which way would you go if you were a renegade car on the lam?"

"I do not know."

"Pick one. It doesn't matter."

"To the right, then," she said, and they turned in that direction.

After half an hour the night was dropping away behind the mountains. To his right morning was exploding at the far end of the Plain, fracturing the sky into all the colors of autumn trees. Murdock drew a squeeze bottle of hot coffee, of the kind spacers had once used, from beneath the dashboard.

"Sam, I think I have found something."

"What? Where?"

"Ahead, to the left of that big boulder, a declivity with some kind of opening at its end."

"Okay, baby, make for it. Rockets ready."

They pulled abreast of the boulder, circled around its far side, headed downhill.

"A cave, or a tunnel," he said. "Go slow —"

"Heat! Heat!" she said. "I'm tracking again!"

"I can even see tire marks, lots of them!" said Murdock. "This is it!"

They moved toward the opening.

"Go in, but go slowly," he ordered. "Blast the first thing that moves."

They entered the rocky portal, moving on sand now. Jenny turned off her visible lights and switched to infra-red. An i-r lens rose before the windshield, and Murdock studied the cave. It was about twenty feet high and wide enough to accommodate perhaps three cars going abreast. The floor changed from sand to rock, but it was smooth and fairly level. After a time it sloped upward.

"There's some light ahead," he whispered.

"I know."

"A piece of the sky, I think."

They crept toward it, Jenny's engine but the barest sigh within the great chambers of rock.

They stopped at the threshold to the light. The i-r shield dropped again.

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It was a sand-and-shale canyon that he looked upon. Huge slantings and overhangs of rock hid all but the far end from any eye in the sky. The light was pale at the far end, and there was nothing unusual beneath it.

But nearer . . .

Murdock blinked.

Nearer, in the dim light of morning and in the shadows, stood the greatest junkheap Murdock had ever seen in his life.

Pieces of cars, of every make and model, were heaped into a small mountain before him. There were batteries and tires and cables and shock absorbers; there were fenders and bumpers and headlamps and headlamp housings; there were doors and windshields and cylinders and pistons, carbureators, generators, voltage regulators, and oil pumps.

Murdock stared.

"Jenny," he whispered, "we've found the graveyard of the autos!"

A very old car, which Murdock had not even distinguished from the junk during that first glance, jerked several feet in their direction and stopped as suddenly. The sound of rivet heads scoring ancient brake drums screeched in his ears. Its tires were completely bald, and the left front one was badly in need of air. Its right front headlamp was broken and there was a crack in its windshield. It stood there before the heap, its awakened engine making a terrible rattling noise.

"What's happening?" asked Murdock. "What is it?"

"He is talking to me," said Jenny. "He is very old. His speedometer has been all the way around so many times that he forgets the number of miles he has seen. He hates people, whom he says have abused him whenever they could. He is the guardian of the graveyard. He is too old to go raiding any more, so he has stood guard over the spare parts heap for many years. He is not the sort who can repair himself, as the younger ones do, so he must rely on their charity and their auto-repair units. He wants to know what I want here."

"Ask him where the others are."

But as he said it, Murdock heard the sound of many engines turning over, until the valley was filled with the thunder of their horsepower.

"They are parked on the other side of the heap," she said. "They are coming now."

"Hold back until I tell you to fire," said Murdock, as the first car — a sleek yellow Chrysler — nosed around the heap.

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Murdock lowered his head to the steering wheel, but kept his eyes open behind his goggles.

"Tell them that you came here to join the pack and that you've monoed your driver. Try to get the black Caddy to come into range."

"He will not do it," she said. "I am talking with him now. He can broadcast just as easily from the other side of the pile, and he says he is sending the six biggest members of his pack to guard me while he decides what to do. He has ordered me to leave the tunnel and pull ahead into the valley."

"Go ahead then — slowly."

They crept forward.

Two Lincolns, a powerful-looking Pontiac, and two Mercs joined the Chrysler — three on each side of them, in position to ram.

"Has he given you any idea how many there are on the other side?"

"No. I asked, but he will not tell me."

"Well, we'll just have to wait then."

He stayed slumped, pretending to be dead. After a time, his already tired shoulders began to ache. Finally, Jenny spoke:

"He wants me to pull around the far end of the pile," she said, "now that they have cleared the way, and to head into a gap in the rock which he will indicate. He wants to have his auto-mech go over me."

"We can't have that," said Murdock, "but head around the pile. I'll tell you what to do when I've gotten a glimpse of the other side."

The two Mercs and the Big Chief drew aside and Jenny crept past them. Murdock stared upwards from the corner of his eye, up at the towering mound of junk they were passing. A couple well-placed rockets on either end could topple it, but the auto-mech would probably clear it eventually.

They rounded the lefthand end of the pile.

Something like forty-five cars were facing them at about a hundred-twenty yards' distance, to the right and ahead. They had fanned out. They were blocking the exit around the other end of the pile, and the six guards in back of him now blocked the way behind Murdock.

On the far side of the farthest rank of the most distant cars an ancient black Caddy was parked.

It had been beaten forth from assembly during a year when the apprentice-engineers were indeed thinking big. Huge it was, and shiny, and a skeleton's face smiled from behind its wheel.

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Black it was, and gleaming chromium, and its headlamps were like dusky jewels or the eyes of insects. Every plane and curve shimmered with power, and its great fishtailed rear end seemed ready to slap at the sea of shadows behind it on an instant's notice, as it sprang forward for its kill.

"That's it!" whispered Murdock. "The Devil Car!"

"He is big!" said Jenny. "I have never seen a car that big!"

They continued to move forward.

"He wants me to head into that opening and park," she said.

"Head toward it, slowly. But don't go into it," said Murdock.

They turned and inched toward the opening. The other cars stood, the sounds of their engines rising and falling.

"Check all weapons system."

"Red, all around."

The opening was twenty-five feet away.

"When I say 'now', go into neutral steer and turn one hundred-eighty degrees — fast. They can't be expecting that. They don't have it themselves. Then open up with the fifty-calibers and fire your rockets at the Caddy, turn at a right angle and start back the way we came, and spray the naphtha as we go, and fire on the six guards . . .

"Now!" he cried, leaping up in his seat.

He was slammed back as they spun, and he heard the chattering of her guns before his head cleared. By then, flames were leaping up in the distance.

Jenny's guns were extruded now and turning on their mounts, spraying the line of vehicles with hundreds of leaden hammers. She shook, twice, as she discharged two rockets from beneath her partly opened hood. Then they were moving forward, and eight or nine of the cars were rushing downhill toward them.

She turned again in neutral steer and sprang back in the direction from which they had come, around the southeast corner of the pile. Her guns were hammering at the now retreating guards, and in the wide rear view mirror Murdock could see that a wall of flame was towering high behind them.

"You missed it!" he cried. "You missed the black Caddy! Your rockets hit the cars in front of it and it backed off!"

"I know! I'm sorry!"

"You had a clear shot!"

"I know! I missed!"

They rounded the pile just as two of the guard cars vanished into the tunnel. Three more lay in smoking ruin. The sixth had evidently preceded the other two out through the passage.

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"Here it comes now!" cried Murdock. "Around the other end of the pile! Kill it! Kill it!"

The ancient guardian of the graveyard — it looked like a Ford, but he couldn't be sure — moved forward with a dreadful chattering sound and interposed itself in the line of fire.

"My range is blocked."

"Smash that junkheap and cover the tunnel! Don't let the Caddy escape!"

"I can't!" she said.

"Why not?"

"I just *can't*!"

"That's an order! Smash it and cover the tunnel!"

Her guns swivelled and she shot out the tires beneath the ancient car.

The Caddy shot past and into the passageway.

"You let it get by!" he screamed. "Get after it!"

"All right, Sam! I'm doing it! Don't yell. *Please don't yell!*"

She headed for the tunnel. Inside, he could hear the sound of a giant engine racing away, growing softer in the distance.

"Don't fire here in the tunnel! If you hit it we may be bottled in!"

"I know. I won't."

"Drop a couple ten-second grenades and step on the gas. Maybe we can seal in whatever's left moving back there."

Suddenly they shot ahead and emerged into daylight. There was no sign of any other vehicle about.

"Find its track," he said, "and start chasing it."

There was an explosion up the hill behind him, within the mountain. The ground trembled, then it was still once more.

"There are so many tracks . . ." she said.

"You know the one I want. The biggest, the widest, the hottest! Find it! Run it down!"

"I think I have it, Sam."

"Okay. Proceed as rapidly as possible for this terrain."

Murdock found a squeeze bottle of bourbon and took three gulps. Then he lit a cigarette and glared into the distance.

"Why did you miss it?" he asked softly. "Why did you miss it, Jenny?"

She did not answer immediately. He waited.

Finally, "Because he is not an 'it' to me," she said. "He has done much damage to cars and people, and that is terrible. But there is something about him, something — noble. The way he has fought the whole world for his freedom, Sam, keeping that pack of vicious machines in line, stopping at nothing to maintain himself that way — without a master — for as long as he can

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remain unsmashed, unbeaten — Sam, for a moment back there I wanted to join his pack, to run with him across the Great Road Plains, to use my rockets against the gates of the Gas Forts for him . . . But I could not mono you, Sam. I was built for you. I am too domesticated. I am too weak. I could not shoot him though, and I misfired the rockets on purpose. But I could never mono you, Sam, really."

"Thanks," he said, "you overprogrammed ashcan. Thanks a lot!"

"I am sorry, Sam."

"Shut up —No, don't, not yet. First tell me what you're going to do if we find 'him'."

"I don't know."

"Well think it over fast. You see that dust cloud ahead as well as I do, and you'd better speed up."

They shot forward.

"Wait till I call Detroit. They'll laugh themselves silly, till I claim the refund."

"I am *not* of inferior construction or design. You know that. I am just more . . ."

"'Emotional'," supplied Murdock.

". . . Than I thought I would be," she finished. "I had not really met many cars, except for young ones, before I was shipped to you. I did not know what a wild car was like, and I had never smashed *any* cars before — just targets and things like that. I was young and . . ."

"'Innocent'," said Murdock. "Yeah. Very touching. Get ready to kill the next car we meet. If it happens to be your boyfriend and you hold your fire, then he'll kill us."

"I will try, Sam."

The car ahead had stopped. It was the yellow Chrysler. Two of its tires had gone flat and it was parked, lopsided, waiting.

"Leave it!" snarled Murdock, as the hood clicked open. "Save the ammo for something that might fight back."

They sped past it.

"Did it say anything?"

"Machine profanity," she said. "I've only heard it once or twice, and it would be meaningless to you."

He chuckled. "Cars actually swear at each other?"

"Occasionally," she said. "I imagine the lower sort indulge in it more frequently, especially on freeways and turnpikes when they become congested."

"Let me hear a machine swear-word."

"I will not. What kind of car do you think I am, anyway?"

"I'm sorry," said Murdock. "You're a lady. I forgot."

There was an audible click within the radio.

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They raced forward on the level ground that lay before the foot of the mountains. Murdock took another drink, then switched to coffee.

"Ten years," he muttered, "ten years . . ."

The trail swung in a wide curve as the mountains jogged back and the foothills sprang up high beside them.

It was over almost before he knew it.

As they passed a huge, orange-colored stone massif, sculpted like an upside-down toadstool by the wind, there was a clearing to the right.

It shot forward at them — the Devil Car. It had lain in ambush, seeing that it could not outrun the Scarlet Lady, and it rushed toward a final collision with its hunter.

Jenny skidded sideways as her brakes caught with a scream and a smell of smoke, and her fifty-calibers were firing, and her hood sprang open and her front wheels rose up off the ground as the rockets leapt wailing ahead, and she spun around three times, her rear bumper scraping the saltsand plain, and the third and last time she fired her remaining rockets into the smouldering wreckage on the hillside, and she came to a rest on all four wheels; and her fifty-calibers kept firing until they were emptied, and then a steady clicking sound came from them for a full minute afterwards, and then all lapsed into silence.

Murdock sat there shaking, watching the gutted, twisted wreck blaze against the morning sky.

"You did it, Jenny. You killed him. You killed me the Devil Car," he said.

But she did not answer him. Her engine started once more and she turned toward the southeast and headed for the Fuel Stop/Rest Stop Fortress that lay in that civilized direction.

For two hours they drove in silence, and Murdock drank all his bourbon and all his coffee and smoked all his cigarettes.

"Jenny, say something," he said. "What's the matter? Tell me."

There was a click, and her voice was very soft:

"Sam — he talked to me as he came down the hill . . ." she said.

Murdock waited, but she did not say anything else.

"Well, what did he say?" he asked.

"He said, 'Say you will mono your passenger and I will swerve by you'," she told him. "He said, 'I want you, Scarlet Lady — to run with me, to raid with me. Together they will never

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catch us,' and I killed him."

Murdock was silent.

"He only said that to delay my firing though, did he not? He said that to stop me, so that he could smash us both when he went smash himself, did he not? He could not have meant it, could he, Sam?"

"Of course not," said Murdock, "of course not. It was too late for him to swerve."

"Yes, I suppose it was — do you think though, that he really wanted me to run with him, to raid with him — before everything, I mean — back there?"

"Probably, baby. You're pretty well-equipped."

"Thanks," she said, and turned off again.

Before she did though, he heard a strange mechanical sound, falling into the rhythms of profanity or prayer.

Then he shook his head and lowered it, softly patting the seat beside him with his still unsteady hand.

— ROGER ZELAZNY

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GALAXY BOOKSHELF

By Algis Budrys

As you know, the essential conflict is between comfortable ignorance and pitiless intelligence. But it ramifies, and there are days when a man hardly knows how much of himself is on which side. Complicating the whole thing is this Heaven-sent gift of self-consciousness which distinguishes Man from the major life-forms so that a man may sit behind a machine writing words which are either pro- or anti-machine, realize what he is doing, and sit there blushing. And, being reasonable, we also realize that the truth is almost certainly staked out somewhere between the fortress of reaction spangled with the latest technological gimcrackery, and the shabby haven of the thinking wanderer whose favorite victim is himself.

In that No Man's Land, science fiction writers of both sides meet in dim grapple without friend or foe. And if you think there is poetry in that, friend, then you have your first affair with Truth yet before you.

But we were discussing books . . . .

"*Davy*," Theodore Sturgeon said in his piece on this book for the *National Review*, "is a —." The staff of that journal cut the noun out, as did the staff of this one, and what remains of Sturgeon's Opinion can be found on the back of the reprint edition which has now come out (Ballantine Book #U6018, 75c, paper, by Edgar Pangborn): "A lovely book, a rollicking book, a candenced, surprising, provocative and musical book." The *South Bend Tribune* compares it to *Tom Jones* and notes its "expert probing of the deepest and darkest areas of life — the sexual

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and the tragic," a quote deserving of inscription on tablets of mud.

What the book is is an autobiographical journal, by Davy with footnotes by assorted friends, of a young man's progress in the dark years of the Northeastern United States some centuries after a nuclear cataclysm which in some way drastically changed sea level and climate, while also wiping out civilization and leaving an inheritance of frequent mutant births. Because the climate is warm, loin cloths and loin cloth humor are standard. Because the times are barbaric, with New England split up into half a dozen nations of which the most advanced are just experimenting with feudalism, the social milieu is overtly puritanical, actually gross, and thus bawdy. Because the hero is a vigorous adolescent male, some of the crucial events in the book are sexual adventures. So much for the deepest and darkest areas of life.

Pangborn has done a rare and wonderful thing — a thing people are always wanting science fiction to have — in creating a believable, impressive, vivid and memorable character. Davy overshadows his adventures by a considerable margin as he moves from his dubious past into his unknown but glorious future. I have no idea how female readers will react to him, but there is little doubt in my mind that males are delighted to identify with him, and not simply because he is such a marvelous stud and an instinctive French horn player besides. He is a man of simple needs and reactions but complicated motives, on the side of Light. In his prime, he is actively associated with an attempt to restore reason to a culture ruled by a repressive Church.

What seems not to have occurred to many people — and you may be assured Pangborn has again scored a terrific *success d'estime* — is that this book achieves its marvelous effects by talking tough while following faithfully along a line of beloved cliches. Some of these charming conventions are sketched in or thrown away as the book begins to show traces of running overlength, but all of them are scrupulously registered with the reader. And what these cliches are — from the acquisition of the golden horn through the bastard Davy's discovery of his father to the vengeance Fate exacts in payment for the horn, and that scene in which a slim, handsome youth reveals himself to be a girl in disguise — are the cliches of the self-confident Establishment tickling itself. It occurs to me that either Richard Wag-

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ner or Gilbert and Sullivan could have used this libretto, and have, creating delicious, totally acceptable entertainment around characters and events which would actually have made the audience run in panic

There are many deep and tragic events in Davy's life, true. There are deep and tragic events in Davy's world. They occur offstage or are stamped in crucial detail as they occur. The attempt to revive civilization, the death of Davy's love, the civil war in which the Church takes back its hold on society . . . all are tags for Davy's highly personalized and severely restricted narrative.

To the end, Davy remains the rebel who never threatens. His true subversions are carried on out of sight. Though you certainly wouldn't want him alone in the parlor with your daughter, he would make a titillating guest at a dinner party, castrated as he is by his inability to sire viable children, a trifle savage, of course, and, all in all, just the perfect cheap thrill.

Now, you may make of that remark what you will. (It horrifies me). On the top of my head, I find a high opinion of *Davy* and a continuing high opinion of Pangborn which will not be altered by anything I think of this particular book. For the record, the book moved me, to the point where for some time I was completely separated from any reality of my own. I'm convinced most people will like the book very much and may re-read it. I'm sure they'll offer it to friends as an example of outstanding work in the field. I've turned several people on to it myself. But I wonder . . . I wonder.

The Rest of the Robots, Isaac Asimov, Doubleday and Company, Inc., 556 pp., $5.95, is introduced as the companion volume to Asimov's much earlier *I, Robot*. It is that — a great omnibus volume containing eight short stories and the complete novels *The Caves of Steel* and *The Naked Sun*. It is also a sort of memorial to Isaac, containing much marginal notation by the author, plus a statement of purpose and an afterword in which Asimov explains that there is still one novel needed to finish his total statement about robots, but that he has been unable to work on any fiction of consequence since the summer of 1958. When I say "memorial," in other words, I'm echoing the mood of this book, which is more that of a scholarly attempt to achieve definition of a completed career — or a permanently interrupted one — than it is that of a book

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of entertainment. It is a fine book of entertainment, by the way, and if you have any sort of permanent library at all, this is your next need in that line.

This growing practice of having story collections include voluminous notes by the author is beginning to wear on me. If the man is alive, the presumption is that these stories are new to the reader and will do their own ingratiating. If the man is dead, let someone else explain the meaning of this material which is now obviously being packaged for what it can be used for, not for what it is. In the case of this book, the effect is particularly unfortunate, since it sucks the juice out of some very vivacious writing indeed, and embalms one of science fiction's most ebullient personalities. A man should not declaim at his own funeral, not even if he does hope to be back from science writing someday.

Well, however that may be, I heartily recommend this book and its author. I hope Doubleday's editorial policies are paying off in wide sales beyond science fiction in-group.

Robert F. Young is one of those writers who now and then produces a memorable and much-discussed story, but is not generally considered a top-rank man as yet. When I say "much-discussed," by the way, I obviously have to mean that the editor who buys it brags about it, and other writers talk about it in bull sessions after it comes out. Hardly anyone knows what the readers think, any more.

One of these "in" stories was *Goddess in Granite,* the star item in *The Worlds of Robert F. Young,* a collection published by Simon & Schuster at $3.95 with an introduction which is really an expanded *F&SF* blurb by Avram Davidson. *Goddess* is poignant, relentless, and heavily evocative, purporting to be about a man climbing an alien mountain which a lost race long ago carved into the shape of a giant sleeping nude woman. It is so effective that it led to at least one autoderivative story about a man climbing a giant tree. Etc.

The other fifteen stories in this volume illustrate Young's more usual concerns, which made him a frequent contributor to *If* when, in an earlier incarnation, it propagandized heavily for "humanism" via sometimes painfully explicit attacks on technology as the enemy of the soul. Some rather good work came out of that now pinched-off pocket universe, and Young was one of the top operators in that genre. Simon & Schuster having neglected to give the magazine

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copyright notices, I cannot tell you how many of the stories are from that time. But many are from that school. Those which are not, tend to be piffle; the best example anyone would need of this is *Written in the Stars,* for which some special award should go to the various editors who have at least had the grace not to brag.

The collection balances more toward the piffling and the propagandistic than it does to the compelling. There is reason to believe Young wants it that way, which is all right as long as he can walk the very fine dividing line between effective emotionalism and the ludicrous. I would wait for the paperback before attempting to reach my own evaluation, if I were you.

In sometimes contentious company with Damon Knight, William Atheling, Jr. was the science fiction critic who transformed the reviewer's trade in this field. Knight, of course, did most of his work in the prozines, one assumes for money and free books as a consequence of his love, whereas Atheling's commentary, often reviewing the prozines themselves appeared in such amateur journals as *Skyhook* and *Axe*. Advent: Publishers, P. O. Box 9228, Chicago, Illinois 60690, have thus produced the perfect complement to their prize-winning earlier compilation of Knight. *The Issue at Hand,* by William Atheling, Jr. edited and with an introduction by James Blish, ($5.00, 136 pp. with index, hardbound), is the definitive Atheling — acidulous, assertive, categorical, conscientious and occasionally idiosyncratic. It subjects individual magazine stories to a species of analysis-in-depth for which I am sure their writers never bargained, but which possibly left some of them better men. The assumption has to be that the clods were beyond redemption in any case, and that the occasional wounded cries were symptomatic of a healthy catharsis.

No bones are made about Atheling having been Blish all along, even when he was dissecting Blish. This kind of thing is from an earlier, happier time in the field, he said sententiously. In those days — a handful of years ago — the perfectability of science fiction was the basic assumption underlying the work of a handful of brilliant dedicated men who rejected "mainstream" literary conventions in favor of classical literary precepts. They may have been right; certainly, they gave the field a push in a fruitful direction, and some of us will certainly never be the same. Their

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approach was almost exclusively destructive — disclaimers to the contrary — and there is just so much of this the climate will tolerate. But there was a lot to destroy, and there is this much about an encounter with the pitiless — one rapidly discovers just what a balloon of fat one is carrying around one's indestructible core, assuming one has such a thing at all.

The publishers offer this book in curious wise: "Virtually the single most necessary text for would-be writers, in or out of the science fiction field." This is horsefeather of purest ray serene; it will undoubtedly do a great many things for and to the psyches of would-be writers who suspect another Atheling in the offing, but it will not teach an unprofessional the first thing about writing. What it will teach him — but of course, this is not a selling point — is what discipline of the intelligence can be, and how it was once applied to one species of literary product. From this, the reader may emerge a more illuminated man, and from *that* he may become a more purposeful and valuable writer, but the odds are not favorable. God produces many more victims than he does Athelings.

Perhaps because we all know this, *The Issue at Hand* is best read as a work of entertainment. As a work of entertainment, it has only one peer in its genre, and I most earnestly urge that you place your order with the publishers; asking your local bookstore to order it for you will result in confusion and delay, which you will resent after discovering what a superbly entertaining book this book is.

— ALGIS BUDRYS

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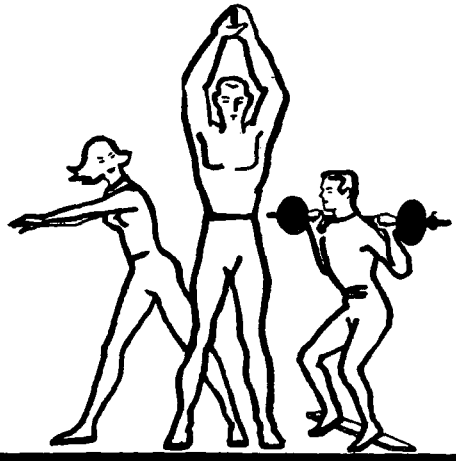

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ONE FACE

by LARRY NIVEN

Illustrated by NODEL

They thought they were marooned light-years from home—but the truth was far worse than that!

I

An alarm rang, like an old-fashioned air-raid siren. The deep voice of the Brain blared, "Strac Astrophysics is not in his cabin! Strac Astrophysics, report to your cabin immediately! The *Hogan's Goat* will Jump in sixty seconds."

Verd tensed. He had to restrain an urge to get up. In nearly two centuries of piloting the *Hogan's Goat*, Verd had never lost a passenger through carelessness. Passengers were *supposed* to be careless. If Strac didn't reach his room Verd would have to postpone Jump to save his life: a serious breach of the customs of travel.

Above the green coffin which was his Jump couch the Brain said, "Strac Astrophysics is in his cabin and protected."

Verd relaxed.

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"Five," said the Brain. "Four. Three . . ."

In various parts of the ship, twenty-eight bodies jerked like springs released. "Oof," complained Lourdi, lying in the Jump couch next to Verd's. "That felt strange." Lourdi was Verd's wife, a mixture of many races and subdivisions of Man, bearing the delicate, willowy beauty born of low gravity worlds. She was an experienced traveler. When she sat up in her green coffin she looked puzzled.

"I've never felt anything like that before. Have you, dear?" she asked.

Verd grunted as he climbed out. He was a few pounds overweight. His face was beefy, smooth and unlined and fashionably hairless. So was his scalp, except for a narrow strip of black brush which ran straight up from between his brow ridges and continued on until it faded out near the small of his back. Most of the hair had been cosmetically implanted. Neither wrinkles nor width of hair strip could tell a man's age, and superficially Verd might have been anywhere from twenty to four hundred years old. It was in his economy of movement that Verd's age showed. He did things the easy way, the fast way. He never needed more than seconds to find it, and he always took that time. He had had a long time to learn.

"No," said Verd. "Let's find out what it was. Brain!" he snapped at the wall speaker.

The silence stretched like a nerve.

"Brain?"

Verd Spacercaptain, Lourdi Coursefinder, and Parliss Lifesystems sat along one wall of the crew common room, watching the fourth member of the crew. Chanda Thinkersyst was a tall, homely woman whose major beauty was her wavy black hair. A strip two inches wide down the center of her scalp had been allowed to grow until it hung to the region of her coccyx, satin black and satin soft, gleaming and rippling as she moved. She stood before the biggest of the Brain screens, which now showed a diagram of the *Hogan's Goat*, and she used her finger as a pointer.

"The rock hit here," she said, pointing halfway back on the spinal maze of lines and little black squares and lighted power-source symbols which represented the Jumper machinery. "It must have been there when we came out of overspace, so the meteor gun never got the chance to stop it. It burned through the Jumper and lost most of its mass in the hull. What was left

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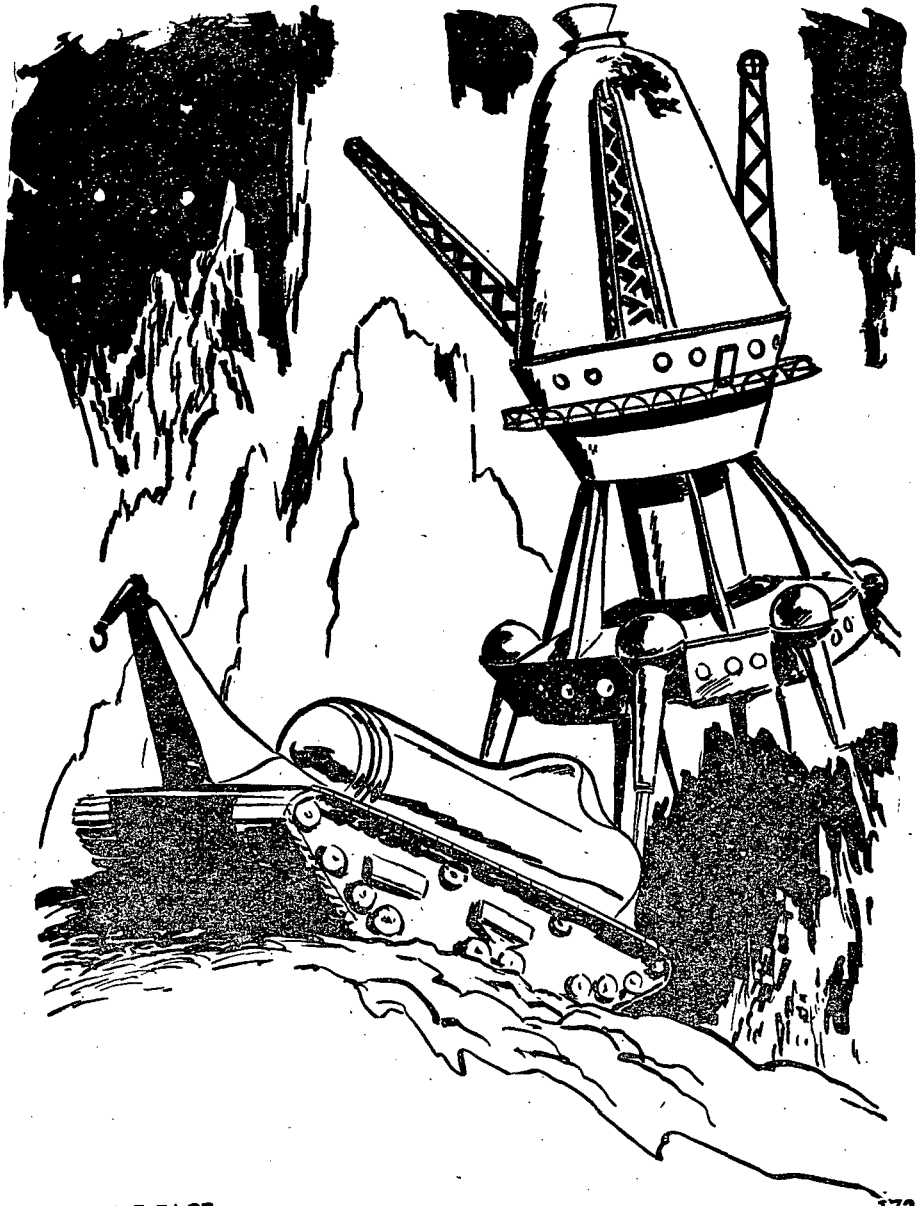

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rained droplets of high-speed molten metal all through the ship's Brain."

Parliss whistled. He was tall, ash blond and very young. "That'll soften it up," he murmured irreverently. He winced at Chanda's glare and added, "Sorry."

Chanda went on. "Of course there's no chance of repairing the Brain ourselves. There were too many points of injury, and most of them too small to find. The Brain can still solve problems and obey orders. The worst problem seems to be this motor aphasia, and I've circumvented that by instructing the Brain to use Morse code. Since I don't know the extent of the damage very precisely, I recommend we let a tug land the passengers on Earth instead of trying to land the *Goat*."

Verd cringed at the thought of what the tug captains would say. "All right. Chanda, what is Morse code?"

Chanda smiled. "Morse is English translated into dots and dashes. It was one of the first things I tried. I didn't really expect it to work, and I doubt if it would on a human patient."

"Thanks, Chanda." Verd stood up and the Brain doctor sat down. "All I will have to say, group, is that we're going to take a bad loss this trip. The Brain is sure to need expensive repairs, and it looks to me like the Jumper will have to be almost completely torn out. It gave one awful discharge when the meteor hit, and most of the parts are fused — Lourdi, what's wrong? We can afford it."

Lourdi shook her head. Her delicate surgeon's fingers gripped hard at the arms of her chair.

"Why not?" Verd asked gently. "We land on Earth and take a vacation while the orbital repair companies do the worrying."

Lourdi Coursefinder gulped air before she could speak. "We'll have to do the worrying, dear," she said brightly. "I couldn't ask the Brain to do it, so I used the telescope myself. That's not Sol."

The others looked at her.

"It's not the Sun. It's a greenish-white dwarf, a dead star. I couldn't find the Sun."

II

Once it had its orders, the Brain was much faster with the telescope than Lourdi. It confirmed her description of the star which was where Sol should have been, and added that it was no star in the Brain's catalogue. Furthermore the Brain could not recognize the volume of space around it. It was still

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scanning stars, hoping to find its bearings.

They sat in the crew common room drinking droobleberry juice and vodka.

The two dozen passengers had been told nothing as yet, but they must have been getting restless. Interstellar law gave each passenger access at all times to the ship's Brain. Someone must know by now that the Brain was incommunicado.

Lourdi stopped making rings on the tabletop. "Chanda, will you translate for me?"

Chanda looked up hopefully. "Of course."

"Ask the Brain to find the planet in this system which most resembles Saturn."

"Saturn?" Chanda's homely face lost its hopeful expression. She turned to the Brain speaker and tapped next to it with a stylus.

Almost immediately a line of short and long white lines began moving left to right across the top of the Brain screen. The screen itself went white, cleared, showing what looked like a picture of Saturn. But there were too many gaps in the ring, and they were too well defined. Chanda said, "Fifth major planet from star. Six moons. Period, 29.46 years. Distance from Sun: 9.54 a. u. Diameter: 72,000 miles. Type gas giant. So?"

Lourdi nodded to herself. Verd and Parliss were watching her. "Ask it to show us the second and third planets."

The second planet was in its quarter phase. The Brain screen showed it looking like a large Moon, but less badly pocked, and with one major difference: an intensely bright area across the middle. Chanda translated the marching dots: "Distance 1.18 a. u. Period 401.4. Diameter 7918 miles. No moon. No air."

The third planet — "That's Mars!" said Lourdi.

It was.

And the second planet was Earth.

"I believe I now know what has happened," said Verd, speaking very loudly. Twenty-seven faces looked back at him across the dining room. He was addressing crew and passengers, and he had to address them in person, for the Brain could no longer repeat his words over the speakers in the rooms. Verd discovered that he did not like public speaking.

"You know that a Jumper creates an overspace in which the speed of light becomes infinite in a neighborhood of the ship. "When —"

"Almost infinite," said a passenger.

"That's a popular misconcep-

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tion," Verd snapped. With an effort he resumed his speaking voice. "The speed of light goes all the way to infinity. If it weren't for the braking spines, which keep our speed finite by projecting almost into normal space, we'd wind up by going simultaneous — being everywhere at once. The braking spines are those things that point out from the girdle of the ship.

"Well, there was a rock in our way, inside the range of the meteor gun, when the Jumper went off. It went through the Jumper and into the Brain.

"The damage it did to our Brain is secondary. Something happened to the Jumper while the rock was in there. Maybe some metal vaporized and caused a short circuit. Anyway the *Goat* jumped back into overspace in the other direction. The speed of light went to zero

"The braking spines stuck out, or we wouldn't have come out until the bitter end of time. Well, then. In a region around the ship, the speed of light was zero. Our mass was infinite, our clocks and hearts stopped, the ship became an infinitesimally thin disc. This state lasted for no time — in ship's time. But when it ended several billion years had passed."

A universal gasp, and then pandemonium.

"Billion?" "Kdapt stomp it —" "Oh, my God!" "Practical joke, Marna. I must say —" "Shut up and let him finish."

The shouting died away. A last voice shouted, "But if our mass —"

"Only in a region around the ship!" Verd recognized the man; it was Strac Astrophysics.

"Oh," said Strac, apparently shrugging off a picture of suns and galaxies snatched brutally down upon his cringing head by the *Goat's* infinite gravity.

"The zero effect has been used before," Verd continued. "For suspended animation, for very long range time capsules, et cetera. But it has never happened to a spacecraft, to my knowledge. Our position is very bad. The Sun has become a greenish-white dwarf. The Earth has lost all its air and has become a one-face world. Like Mercury, it no longer rotates. Mercury isn't there any more. Neither is the Moon.

"You can forget the idea of going home, and say good-by to anyone you knew outside this ship. This is the universe, ourselves and nobody else, and our only duty is to survive. We will keep you informed of developments. Anyone who wishes his passage money refunded is welcome to it."

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In a crackle of weak, graveyard laughter, Verd bobbed his head in dismissal.

The passengers weren't taking the hint. Hearing the captain in person was as strange to them as it was to Verd. They sat looking at each other, and a few got up, changed their minds and sat down again. One called, "What will you do next?"

"Ask the Brain for suggestions," said Verd. "Out, now!"

"We'd like to stay and listen," said the same man. He was short and broad and big-footed, probably from one of the heaviest planets, and he had the rough-edged compactness of a land tank. "We've the right to consult the Brain at any time. If it takes a translator we should have a translator."

Verd nodded. "That's true." Without further comment he turned to Chanda and said, "Ask the Brain what actions will maximize our chance of survival for maximal time."

Chanda tapped her stylus rhythmically next to the Brain speaker.

The dining room seemed raucous with the sound of breathing and the stealthy shuffling of feet. Everyone seemed to be leaning forward.

The Brain answered in swiftly moving dots of light. Chanda said. "Immediately replace — Eve of Kdapt!" Chanda looked very startled, then grinned around at Verd. "Sorry, Captain. 'Immediately replace Verd Spacercaptain with Strac Astrophysics in supreme authority over ship.'"

In the confusion that followed, Verd's voice was easily the loudest. "Everybody out! Everybody but Strac Astrophysics."

Miraculously, they obeyed.

III

Strac was a long, tall oldster, old in habits and manners and mode of dress; a streak of black-enameled steel wool emphasized his chocolate scalp, and his ears spread like wings. Verd wondered why he didn't have them fixed, and then wondered no longer. Strac obviously made a fetish of keeping what he was born with. His hairline didn't start until the top of his forehead. His fingernails had not been removed. They must have required constant trimming. It was a wonder he didn't have a mustache!

"I believe you've traveled on my ship before," Verd told him. "Have you ever said or done anything to give the Brain, or any passenger, the idea that you want to command my ship?"

"Certainly not!" Strac seemed as ruffled by the Brain's sug-

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gestion as Verd himself. "The Brain must be insane," he muttered venomously. Then he looked up uneasily. "*Could* the Brain be insane?"

"No," Chanda answered. "Mechanical Brains can be damaged, they can be destroyed, but if they come up with an answer it's the right one. If there's even the slightest doubt you'll get an 'insufficient data'."

"Then why would it try to take my command?"

"I don't know. Captain, there's something you should know right now."

"What?"

"The Brain has stopped answering questions. It stopped right after the passengers left. It obeys orders if they're given in Morse, but it won't answer back."

"Oh, Kdapt take the Brain!" Verd rubbed his temples with his fingertips. "Parliss, what did the Brain know about Strac?"

"Same as any other passenger. Name, profession, medical state and history, mass, world of origin. That's all."

"Hmph. Strac, where were you born?"

"The Canyon."

"Oh? Kind of lonely, wasn't it?"

"In a way, yes. Three hundred thousand is a tiny population for a solar system, and there's no room for more. There's no air above the Canyon rim, of course. I got out as soon as I could. Haven't been back in almost a century."

"I see."

"No, Captain, I don't think you can. In the Canyon, it's the culture that's lonely. The people are constantly surrounded by others, and everybody thinks just like everybody else. You'd say there's no cultural cross-fertilization. The pressure to conform is brutal."

"Interesting. Strac, do you have any bright ideas that the Brain might have latched onto somehow? Or do you perhaps have a reputation so large in scientific circles that the Brain might know of it?"

"No. I'm sure that's not the case."

"Well, do you have any ideas at all? We need them badly."

"I'm afraid not. Captain, just what *is* our position? It seems that the biggest emergency is that everyone is dead but us. How do we cope with an emergency like that?"

"We don't," said Verd. "Not without time travel, and that's impossible. Isn't it?"

"Of course."

"Chanda, exactly what did you ask the Brain? How did you phrase it?"

"Maximize the probability of

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our surviving for maximum time. That's what you asked for. Excuse me, Captain, but the Brain almost certainly assumed that 'maximum time' meant 'forever'."

"All right. Parliss, how long will the ship keep us going."

Parliss was only thirty years old, and was burdened with youth's habitual unsureness; but he knew his profession well enough. "A long time, Captain. Decades, maybe centuries. There's some boosterspice seeds in our consignment for the Zoo Of Earth; if we could grow boosterspice aboard ship we could keep ourselves young. The air plant will work as long as there's sunlight or starlight. But the food converter — well, it can't *make* elements. Eventually they'll get lost somewhere in the circuit, and we'll start getting deficiency diseases, and—hmmm. I could probably keep us all alive for a century and a half. And if we institute cannibalism we could —"

"Never mind. Let's call that our limit if we stay in space. We've got other choices, Strac, none of them pleasant.

"We can get to any planet in the solar system, using the photon drive. There's enough solid core in the landing rockets to land us on any world smaller than Uranus, or to land and take off from a world the size of Venus or smaller, and we can take off from anywhere with the photon drive, leaving nothing but boiling rock behind. But nothing in the system is habitable."

"If I may interrupt," said Strac. "Why do we have a photon drive?"

"Excuse me?"

"Why does the *Hogan's Goat* need a photon drive? Why didn't she just use the Jumper to get from one planet to another, and the solids to get up and down?"

"Oh. It's like this. The math of Jumper travel postulates a figure for the mass of a very large neighborhood, one which takes in most of the local group of galaxies. That figure is almost twice the actual rest mass in the neighborhood. So we have to accelerate until the external universe is heavy enough for us to use the Jumper."

"I see."

"Even with total mass conversion we have to carry an awful lot of fuel, And without the artificial gravity to protect us it would take years to reach the right velocity. The drive gives us a good one hundred gee in uncluttered space." Verd grinned at Strac's awed expression. "We don't advertise that. Passengers might start wondering

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what would happen if the artificial gravity went off.

"Third choice. We can go on to other stars. It would take decades for each trip, but by refueling in each system we could get to a few nearby stars in the hundred and fifty years Parliss gives us. But every world we ever used must be dead by now, and the G type stars we can reach in the time we've got may have no useful worlds. It would be a gamble."

Strac shifted uneasily in his chair. "It would be worse than that. We don't necessarily need G type suns, we can settle under any sun that won't roast us with ultraviolet, but we do need a binary planet. They're extremely rare, you know. I would hate to gamble that we could reach one by accident. Can't you order the Brain to search out a habitable planet and go there?"

"No," said Lourdi, from across the room. "The telescope isn't that good, not when it has to peer out of one gravity well into another. The light gets all bent up."

"And finally," said Verd, "if we did land on an Earth-sized planet that looked habitable, and then found out it wasn't, we couldn't land anywhere else. Well what do you think?"

Strac appeared to consider. "I think I'll go have a drink. I think I'll have several. I wish you'd kept our little predicament secret a few centuries longer." He stood up with great dignity and turned to the door, then spoiled the exit by turning back. "By the way, Captain, have you ever been to a one-face world? Or have your travels been confined to the habitable worlds?"

"I've been to the Moon, but that's all. Why?"

"I'm not sure," said Strac, and left, looking thoughtful. Verd noticed that he turned right. The bar was aft of the dining room, to the left.

Gloom thickened in the nearly empty dining room. Verd fumbled in his belt pouch, brought out a white tube not much bigger than a cigarette. Eyes fixed morosely on a wall, he hung the tube between his lips, sucked through it, inhaled through the side of his mouth. He exhaled cool, thick orange smoke.

The muscles around his eyes lost a little of their tension.

Chanda spoke up. "Captain, I've been wondering why the Brain didn't answer me directly, why it didn't just give us a set of detailed instructions."

"Me too. Have you got an answer?"

"It must have computed just how much time it had before its

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motor aphasia became complete. So instead of trying to give a string of instructions it would never finish, it just named the person most likely to have the right answer."

"That sounds right, Chanda. But why Strac? Why not me, or one of you?"

"Good question," said Chanda wearily. She closed her eyes and began to recite, "Name, profession, mass, world of origin, medical history. Strac Astrophysics, the Canyon . . ."

IV

In the next few days, each member of the crew was busy at his own specialty.

Lourdi spent most of her time at the telescope. It was a powerful instrument, and Chanda told the Brain to find planets of nearby suns and hold the telescope on them while Lourdi looked. But even the nearest were only circular dots.

She did manage to find the Moon — in a Trojan orbit, trailing sixty degrees behind the Earth in its path around the Sun.

Parliss spent his waking hours in the ship's library, looking up tomes on the medical aspects of privation. Gradually he was putting together a detailed program that would keep the passengers healthy for a good long time, and alive for a long time after that, with safety factors allowing for breakdown of the more delicate parts of the life-support system.

Later he intended to prepare a similar program using cannibalism to its best medical advantage . . . but that could wait. The problem was more complex than it seemed, involving subtle physiological effects from moral shock. It wouldn't give them more than another century anyway, since the air circulator wouldn't last longer than that.

Very slowly and painfully, with miniature extensible waldo machinery, Chanda searched out the tiny burns in the Brain's cortex and scraped away the charred semiconducting ash. "Probably won't do any good," she admitted grimly, "but the ash may be causing short circuits, and I certainly can't do any *harm* by getting it out. I wish I had some fine wire."

Once he was convinced that the Jumper was stone cold dead, Verd left it alone. That gave him little to do but worry.

He worried about the damage to the Brain, and wondered if Chanda was being overoptimistic. She was like a surgeon forced to operate on a friend; she refused even to consider that the Brain might get worse in-

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stead of better. Verd worried, and he very carefully checked the wiring in the manual override for the drives, moving along outside the hull in a vacuum suit.

He worried about the passengers, too. They would be better off if they were given the illusion that they were helping. The log had a list of passengers, and Chanda got the Brain to put it on the screen, but the only useful professions Verd could find were:

Strac Astrophysics
Jimm Farmer
Avran Zooman

The other professions were all useless here. Taxer, Carmaker, Adman — he was lucky to find anything at all. "All the same," he told Lourdi that night, "I'd have given anything to find a Jak FTLsystems."

"How 'bout a Harlan Alltrades?"

"On this tub? Specializing nonspecialists ride the luxury liners." He twisted restlessly in the air between the sleeping plates. "Wanta buy an aircar? It was owned by a sniveling coward —"

Jimm Farmer was the heavy-planet man, with long, smooth muscles and big broad feet. He had a Jinx accent, Verd guessed, which meant he could probably kick holes in hullmetal.

"I've never worked without machinery," he said. "Farming takes an awful lot of machinery. Diggers, plowers, seeders, transplanters, aerators, you name it. Even if you gave me seeds and a world to grow them on I could do nothing by myself." He scratched his bushy eyebrows. For some reason he'd let them grow outward from the end of his hairline. "But if all the passengers and crew pitched in and followed directions, and if they didn't mind a little back-breaking labor, I think we could raise something . . . if we had a planet with good dirt and some seeds."

"At least we've got the seeds," said Verd. "Thanks, Mr. Farmer."

Verd had first seen Avran Zooman walking through the hall at the beginning of the trip. Zooman was a shocking sight. His thin strip of hair was bleached-bone white and started halfway back on his scalp. His skin had faint lines in it, like the preliminary grooves made in tooled leather. Verd remembered dodging into an empty stateroom to regain his composure. Obviously this man was a member of one of those strange, nearly extinct religious orders which prohibit the taking of boosterspice.

But he didn't behave like a religious nut. Verd found him

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friendly, alert, helpful and very likable. His thick We Made It accent was heavy with esses.

"In this one respect we are lucky," Avran was saying. "Or you are lucky. I should have been lucky enough to miss my ship. I came to protect your cargo, which is a selection of fertile plant seeds and frozen animal eggs for the Zoo Of Earth Authority."

"Exactly what's in the consignment?"

"Nearly everything you could think of, Captain. The Central Government wished to establish a zoo which would show all the life that Earth has lost as a result of her intense population compression. I suspect they wished to encourage emigration. This is the first consignment, and it contains a male and female of every variety of domestic life on We Made It. There were to be other shipments from other worlds, including some extremely expensive mutations from Wonderland designed to imitate the long extinct 'big cats'. We do not have those, nor the useless decorative plants such as orchids and cactus, but we do have everything we need for farming. All we need is a place to plant it."

"Not quite. Not unless you're carrying an all-purpose incubator for the animals."

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"Unfortunately I am not. Perhaps I could show how to make one out of other machinery." Avran smiled humorously. "But there is a problem. I am fatally allergic to boosterspice extract. This means that I will be dead in less than a century, which unfortunately limits the length of any journey of exploration that I can make."

Frantically Verd tried to sort his climbing emotions before they strangled him. There was admiration that Avran could live so casually with the knowledge of imminent death, wonder that he could have achieved such a state of emotional maturity in what could be no more than fifty years. There was shame, and horror; compounded horror at the knowledge that he was flushing, and Avran could see it.

Avran looked concerned. "Perhaps I should come back later."

"No! I'm all right." Verd had found his tobac stick without thinking. He pulled in a deep, cooling draft of orange smoke, and held it in his lungs for a long moment.

"A few more questions," he said briskly. "Does the Zoo consignment have grass seed? Is there any bacteria or algae?"

"Grass, yes. Forty-three different varieties. But no bacteria, I'm afraid."

"That's not good. It takes bacteria to turn rock dust into fertile soil."

"Yes." Avran considered. "We could start the process with sewage from the ship, and use transplants of intestinal flora. Mix in the rock dust a little at a time. We have earthworms fortunately. It might work."

"Good."

"Now I have a question, Captain. What is that?"

Verd followed his pointing finger. "Never seen a tobac stick?"

Avran shook his head.

"There's a funny tranquilizer in tobacco that helps you concentrate, lets you block out distractions. People used to have to inhale the tobacco smoke to get it. That caused lung cancer. Now we do it better. Is there any tobacco in the hold?"

"I'm afraid not. Can you give up the habit?"

"If I have to. But I won't like it."

Verd sat for a moment after Avran had left, then got up and hunted down Parliss. "Avran claims to be allergic to boosterspice," he told him. "I want to know if it's true. Can you find out?"

"Sure, Captain. It'll be in the medical record."

"Good."

"Why would he lie, Captain?"

"He may have a religious ban

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on boosterspice. If so, he'd be afraid I'll shoot him full of it if I think I need him."

There was no point in interviewing Strac Astrophysics again. Parliss told him that Strac spent most of his time in his room, and that he had borrowed a pocket computer from Chanda.

"He must have something in mind," said Parliss.

The next day he came to the cabin. "I've gone through the medical histories," he said. "We're all in good shape, except Avran Zooman and Laspia Waitress. Avran has just what he said he had. Laspia has a pair of cultured arms, no telling how she lost the old ones, and both ulnae have machinery in them. One's a dooper, one's a multirange sonic. I wonder what that sweet girl is doing armed to the teeth like that."

"So do I. Did you manage to sabotage her?"

"I put a power gain in her room. If she tries to shoot anyone she'll find her batteries are dead."

The sixth day was the day of the mutiny.

V

Verd and Parliss were in the crew common room going over Parliss' hundred-and-fifty-year schedule for shipboard living, when the door opened and Chanda walked in. The first hint came from Chanda's taut, determined expression. Then Verd saw that someone was following her in.

He stood up to protest, then stood speechless as a line of passengers trooped into the crew room, filling it nearly to bursting.

"I'm sorry, Captain," said Chanda, "but we've come to demand your resignation."

Verd, still standing, let his eyes run over them.

The pretty auburn-haired woman in front, the one who held her arms in an inconspicuously strained attitude while the others took care not to crowd her elbows — she must be Laspia Waitress. Jimm Farmer was also in the front rank. And Strac Astrophysics, looking acutely embarrassed, and many looked angry; Verd wasn't sure who they were angry at. He gave himself a few seconds to think. Let 'em wait it out . . .

"On what grounds?" he asked mildly.

"On the grounds that it's the best chance we have to stay alive," said Chanda.

"That's not sufficient grounds. You know that. You need some criminal charge to bring against me — dereliction of duty, sloppiness with the photon drive, mur-

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der, violation of religious tenets, drug addiction. Do you wish to make such a charge?"

"Captain, you're talking about impeachment — legal grounds for mutiny. We don't have such grounds. We don't want to impeach you, regardless."

"Well, just what did you think this was, Chanda? An election?"

"We're inviting you to resign."

"Thank you, but I think not."

"We could impeach you, you know," said Jimm Farmer. He was neither embarrassed nor angry; he was a man doing a job. "We could charge you with addiction to tobac sticks, try you and convict you."

"*Tobac sticks?*"

"Sure, everyone knows they're not addictive. The point is that there aren't any higher courts to reverse our decision."

"I guess that's true. Very well, go ahead."

Parliss broke in, in a harsh whisper. "Chanda, what are you doing?" His face, scalp and ears were flushed sunset red.

"Quiet, Parl. I'm only doing what needs to be done."

"You're out of your head with grief for that damn mechanical moron."

Chanda flashed him a smoking glare. Parliss returned it. She turned away, aloofly ignoring him.

Strac spoke for the first time. "Don't make us use force, Captain."

"Why not? Do you idiots realize what you're asking?" Verd's self control was going. He'd been a young man when the *Hogan's Goat* was built. In nearly two centuries he'd flown her further than the total distance to Andromeda and back; nursed her and worried about her and lived his life in her lighted, rushing womb. What he felt must have showed in his face, for the girl with the auburn hair raised her left arm and held it innocently bent, pointed right at him. Probably the sonic; no doubt he would have been swathed in calming vibrations if her batteries had worked. But all he felt was nausea and a growing rage.

"I do," Strac said quietly. "We're asking you to make it possible for us to give you back the *Hogan's Goat* after we're through with it."

Verd jumped at him. A cold corner of his mind was amazed at himself, but most of him only wanted to get his hands around Strac's bony throat.

He glimpsed Laspia Waitress staring in panic at her forearms, and then something clamped a steel hand around his ankle and jerked. Verd stopped suddenly in midair. It was Jimm Farmer. He had jumped across the room like a kangaroo. Verd looked back

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over his shoulder and carefully kicked him hard under the jaw. Jimm looked surprised and hurt. He squeezed!

"All right," said Verd. "All right. I'll resign."

VI

The autodoc mended two cracked ankle bones, injected mysterious substances into the badly bruised lower terminal of his Achilles tendon, and ordered a week of bed rest.

Strac's plans were compatible. He had ordered the ship to Earth. Since the *Goat* was still moving at nearly the speed of light, and had gone well past the solar system, the trip would take about two weeks.

Verd began to enjoy himself. It seemed the first time since the last Jump that he had stopped worrying for more than a few minutes at a time. He even persuaded Lourdi to cooperate with Strac. At first she would have nothing to do with the mutineers, but Verd convinced her that the passengers needed her professional help.

After a week on his back he started to move around the ship, trying to get an idea of the state of the ship's morale. He did little else. He was perversely determined not to interfere with the new captain.

Laspia Waitress stopped him in the hall. "Captain, I've got to take you into my confidence. I am an ARM, a member of the Central Government Police. There's a badly wanted man aboard this ship." And before Verd could start to humor her she produced authentic-looking credentials.

"He's involved in the Free Wonderland conspiracy," she went on. "Yes, it still exists. We had reason to think he was aboard the *Hogan's Goat,* but I wasn't sure until he found some way to disarming me. I still don't know just who he is."

Verd saw she was frightened. "I did that. I didn't want anyone wandering around my ship with concealed weapons."

"You fool! How am I going to arrest him?"

"Why would you arrest him? Who would you turn him over to if you did? What harm can he do now?"

"What *harm?* He's a revolutionary, a — a seditionist!"

"Sure. He's fanatically determined to free Wonderland from the tyranny of the Central Government of Earth. Only Wonderland and the Central Government are eons dead, and we haven't a single Earthman on board. Unless you're one, and if you are nobody knows it."

He left her sputtering.

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Surprisingly, Strac had talked to no one, except to ask questions of the crew members. If he had plans they were all his. Perhaps he wanted one last look at Earth, ancient grandmother Earth, dead now of old age. Many passengers felt the same.

Verd did not. He and Lourdi had last seen Earth twelve years ago — subjective time — when the *Goat* was getting her lift support systems renovated. They had spent a wonderful two months in Rio de Janeiro, a teeming hive of multicolored human beings moving among buildings that reached like frustrated spacecraft toward the sky. Once they had even seen two Pierson's Puppeteers, natives from l'Elephant, shouldering their way unconcerned among the swarming humans, but shying like three-legged fawns at the sight of a swooping aircar.

Perhaps Puppeteers survived even now, somewhere in the smoky arms of this galaxy or another. Perhaps even human beings lived on, though they must be changed beyond recognition. But Verd did not want to look on the corpse face of Earth. He wanted his memories unspoiled.

He was not asked.

On the fifteenth ship's-morning the Earth was a wide, brilliant crescent, brightest where the seas had dried across the sunward face and left a vast, smooth bed of salt. The sun shone with eery greenish-white radiance beyond the polarized windows. Verd and Lourdi were finishing breakfast when Strac appeared outside the one-way transparent door. Lourdi let him in.

"I thought I'd better come personally," said Strac. "We'll be meeting in the crew common room in an hour. I'd appreciate it if you'd be there, Verd."

"I'd just as soon not," said Verd. "Thanks anyway. Have a roast dove?"

Strac politely declined and left. He did not repeat his invitation.

"He wasn't just being polite," said Lourdi. "He needs you."

"Let 'im suffer."

Lourdi took him gently by the ears and turned him to face her — a trick she had developed to get his undivided attention. "Friend, this is the wrong time to exercise your right to be inconsistent. You talked me into working for the usurper on grounds that the passengers need my help. Well, I'm telling you they need yours."

"Dammit, Lourdi, if they needed me I'd still be captain!"

"They need you as a crewman!"

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Verd set his jaw and looked stubborn. Lourdi let go of his ears, patted them gently and stepped back. "That's my say. Think it through, Lord and Master."

Six people sat in a circle around the table. Verd was there, and Lourdi and Parliss and Chanda. Strac sat in the Captain's chair, under the Brain screen. The sixth man was Jimm Farmer.

"I know what we have to do now," said Strac His natural dignity seemed to have deepened lately; his thin, dark face didn't smile, and his shoulders sagged as if ship's gee were too heavy for him. "But I want to consider alternatives first. To that end I want you all to hear the answers to questions I've been asking you individually. Lourdi, will you tell us about the Sun?"

Lourdi stood up. She seemed to know exactly what was wanted.

"It's very old," she said. "Terribly old and almost dead. The Sun followed the Main Sequence all the way. After our Jumper went funny it continued to get hotter and brighter and bigger and bluer as the region of fusing hydrogen burned its way up to the surface. It could have left the Main Sequence by going supernova or by suddenly expanding into a red giant, but if it had there wouldn't be any inner planets. So the Sun expanded to a white giant, absorbed Mercury, burnt up the last of its hydrogen and collapsed.

"It contracted to a white dwarf. There was unradiated heat working its way out, and heat of contraction, and there were still fusion reactions going on inside, because nuclear fusion gives heat all the way up to iron. So the Sun still gave off light, and still does, even though for all practical purposes there's no fuel left. Now it's a greenish dwarf, and still cooling. In millions of years it'll be a reddish dwarf, and in more millions, a black one."

"Only millions?"

"Yes, Starc. Only millions."

"How much radiation is being put out now?"

Lourdi considered. "About the same as in our time, but it's bluer light. The Sun is much hotter than when we knew it, but all its light has to come through a smaller surface area."

"Thanks, Loudi. Jimm Farmer, could you grow foodstuffs under such a star?"

Peculiar question, thought Verd. He sat up straighter, fighting a horrible suspicion.

Jimm looked puzzled, but answered readily. "If the air was

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right, and I had enough water, sure I could. Plants like ultraviolet. The animals might need protection from sunburn."

"Lourdi, what's the state of the galaxy?"

"Lousy," she said promptly. "Too many dead stars, and most of what's left are blue-white and white giants. Too hot. I'd bet that any planet that had the right temperature for life would be a gas giant like Jupiter. The young stars are all in the tips of the galactic arms, and they've been scattered by the spinning of the Galaxy. There are still younger stars in the globular clusters. Do you want to hear about them?"

"We'd never reach them," said Verd. His suspicion was a certainty. He blew orange smoke and waited, silently daring Strac to put his intention into words.

"Right," said Strac. "Chanda, how is the Brain?"

"Very, very sick. It might stop working before the decade's end. It'll never last out the century, crippled as it is." Chanda wasn't looking so good herself. Her eyes were red, underlined with blue shadows. Verd thought she had lost weight. Her hair hadn't had its usual care. She continued, as if to herself, "Twice I've given it ordinary commands and gotten the Insufficient Data sign. That's very bad. It means the Brain is starting to distrust its own memory banks."

"Thanks, Chanda." Strac was carrying it off pretty well, but beneath his commander's dignity he looked determined and — frightened. If Verd was right he had reason. "Now you know everything," he said. "Any comments?"

Parliss said, "If we're going star hunting we ought to stop on Pluto and pick up an air reserve. We could stay alive maybe three hundreds years that way."

"Uh-huh. Anyone else?"

Nobody.

"Well, that's that." Strac drew a deep breath, let it out slowly. "Now you know everything. There's too much risk in searching the nearby stars. We'll have to go down. Chanda, please order the Brain to land us on the highest flat point in the noon-equator region."

Chanda didn't move. Nobody moved.

"I knew it," Verd said, very quietly. His voice echoed in the greater quiet. The crew common room was like a museum exhibit. Everyone seemed afraid to move. Everyone but Jimm Farmer, who in careful silence was getting to his feet.

"You're out of your mind."

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Verd paused and tried to make his voice persuasive. "Didn't you understand, Strac? The Brain put you in charge because you had more useful knowledge than the rest of us. You were supposed to find a new home for the human race."

They were all staring at Strac with varying degrees of horror. All but Jimm, who stood patiently waiting for the others to make up their minds.

"You were not supposed to give up and take us home to die!" Verd snapped. But Strac was ignoring him. Strac was glaring back at them all, with rage and contempt in his eyes.

Parliss, normally Nordic-pale, was white as moonlight. "Strac, it's dead! Leave it! We can find another world —"

"You mewling litter of blind idiots!"

Even Jimm Farmer looked shocked.

"Do you think I'd kill us all for a twinge of homesickness? Verd, you know better than that, even if nobody else does. They were on *your* back, twenty-seven people and all their potential children, all waiting for you to tell them how to die. Then suddenly there was a mutiny. You're free! They're all shifted to me!"

His eyes left Verd's and ranged over his shocked, silent crew. "Idiots blindly following the orders of a damaged mechanical brain. Accepting everything you're told. Lourdi!" he snapped. "What does 'one face' mean?"

Lourdi jumped. "It means the planet doesn't rotate with respect to its star."

"It doesn't mean the planet has only one face?"

"Wha-at?"

"The Earth has a back to it."

"Sure!"

"What's it look like?"

"I don't know." Lourdi thought a moment. "The Brain knows. You remember you asked Chanda to make the Brain use the radar to find out. Then she couldn't get it to show us the picture. We can't use the telescope because there's no light, not even infra-red. It must be terribly cold. Colder than Pluto."

"You don't know," said Strac. "Well, I do. We're going down, Chanda?"

"Tell us about it," said Jimm Farmer.

"No." Verd spoke with all the authority he could muster. The responsibility Strac carried showed in his bent shoulders and bleak expression, in his deep, painful breathing, in his previous attempts to pass the buck to someone else. Strac must

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know exactly what he was doing. He must! If he didn't he couldn't have moved at all!

"Tell us," Jimm repeated. His tone was flat with menace.

"No. Shut up, Jimm. Or we'll let you make all the decisions from now on."

Jimm thought it over, suddenly laughed and sat down. Chanda picked up her stylus and began tapping on the speaker.

VII

The *Hogan's Goat* lay at an odd angle, nearly in the center of a wide, ancient asteroid crater, under a small, fiercely bright sun set in a black sky.

There, marring the oversized girdle with its remaining spires, was the ragged, heat-stained hole where the meteor had struck. There, extending for two thirds of her length, was the gash a rack had made along her belly in the last seconds of the landing. And at the tail, aft of the girdles, that static explosion of curved metal strips was where the photon drive had been before Strac had ordered it cut free.

It had been a bad landing. Even at the start the Brain was a fraction of a second slow in adjusting the ship's gravity, so that the floor had bucked queasily under them as they dropped. Then, when the ship was already falling toward the crater, Strac had suddenly told Chanda that the photon drive had to be accessible after landing. Chanda had started tapping — and the ship had flipped at an angle.

The *Hogan's Goat* had never been built to land that way. Most of the passengers sported bruises. Avran Zooman had a broken arm. Without booster-spice the bone was slow to heal.

A week of hard, grinding labor was nearly over.

Only servomachinery now moved on the crater floor. Most of the activity centered around the huge silver tube which was aimed like a cannon at a point ten degrees above the horizon. The drive tube had been towed up against the crater wall, and a great mound of piled, heat-fused earth now buried its lower end. Cables and fuel pipes joined it higher up.

"Hi! Is that you, Captain?"

Verd winced. "I'm on top of the crater wall," he said, because Strac couldn't locate him from the sound of his voice. The indeterminate voice had to be Strac. Only Strac would shout into a suit radio. "And I'm not the captain."

Strac floated down beside him. "I thought I'd see the sights."

"Good. Have a seat."

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"I find it strange to have to call you Verd," said the astrophysicist. "It used to be just 'Captain'."

"Serves you right for staging a mutiny — Captain."

"Of course. I always knew my unquenchable thirst for power would get me in trouble."

"Don't give me that."

They watched as a tractor-mounted robot disconnected a fuel pipe from the drive, then rolled back.

A moment later a wash of smoky flame burst from the pipe. It changed color and intensity a dozen times within a few seconds, then died as abruptly as it had begun. The robot waited for the white heat to leave the pipe, then rolled forward to reconnect it.

Verd asked, "Why are you so calm all of a sudden?"

"My job's over," said Strac with a shrug in his voice. "Now it's in the lap of the gods."

"Aren't you taking an awful chance?"

"Oh? You've guessed what I'm trying to do?"

"Sure. You're using the photon drive to start the Earth spinning again."

"Why?" Strac baited him.

"You must be hoping there's air and water frozen on the dark side. But it seems like a thin chance. Why were you afraid to explain before?"

"You put it that way — and then ask why I didn't put it to a vote? Verd, would you have done what I did?"

"No. It's too risky."

"Suppose I tell you that I *know* the air and water is there. It has to be there. I can even tell you what it looks like, a great shallow ice dome, stratified according to freezing point, with water ice on the bottom, then carbon dioxide, and all the way up to a few shifting pools of helium II. Surely you don't expect a one-face world to have a gaseous atmosphere? It would all freeze out on the night side. It has to."

"It's there? There's air here? Your professional word?"

"My word as an astrophysicist."

Verd stretched like a great cat. He couldn't help himself. He could actually feel the muscles around his eyes and cheeks rippling as they relaxed, and a great grin crawled toward his ears. "You comedian!" he laughed. "Why didn't you say so?"

"Suppose I kept talking."

Verd turned to look at him.

"You'll have thought of some of these things yourself. Can we breathe the air? It had billions of years to change chemically before it froze. Is there enough

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of it? Or did too much boil off while the Sun was a blue-white giant? Maybe there's too much, generated by volcanic action after the Moon was too far away to skim it off. Lourdi said the sun is putting out about the right amount of heat, but just *how* close will it be to a livable temperature? Can Jimm Farmer make us topsoil? There'll be live soil on the nightside, but can we get there if we have to? The Earth must be frozen all the way to the center by now, there can't be any radioactivity left — but the drive could still cause serious earthquakes. Kdapt knows I've sweated over that one! Well, Captain, would you have taken all those risks?"

"She blows."

Traces of hyrogen, too thin to stop a meteor, glowed faintly in the destroying light of the drive. A beam like a spotlight reached out over the sharp horizon.

Anything that light touched would flame and blow away on the wings of the photon wind. The drive nosed a little deeper into its tomb of lava.

The ground trembled. Verd turned on his flying unit, and Strac rose after him. Together they hovered over the shaking ground.

In space the drive would have been generating one hundred savage gravities. Here . . . almost none. Almost.

Little quick ripples came running from the horizon where the drive beam pointed. They ran in parallel lines of dancing dust across the crater floor, sent rocks tumbling from the crater wall, coming closer and closer together.

"Maybe I wouldn't have risked it," said Verd. "I don't know."

"That's the real reason the Brain put me in charge. Did you see the oxygen ice as we went by the nightside? Or was it too dark? To you this frozen air is purely imaginary, isn't it?"

"I'll take your professional word."

"But I don't have to. I take one less risk than you do," Strac said.

Dust danced over the shaking ground. But the ripples were less violent, and were coming less frequently now.

"The Brain was damaged," Verd said softly, musing aloud.

"Yes," said Strac, frowning down into the old crater. Suddenly he touched his controls and started swimming down. "Come on, Verd. In a few days we'll have air. We've got to get ready for wind and rain."

— LARRY NIVEN

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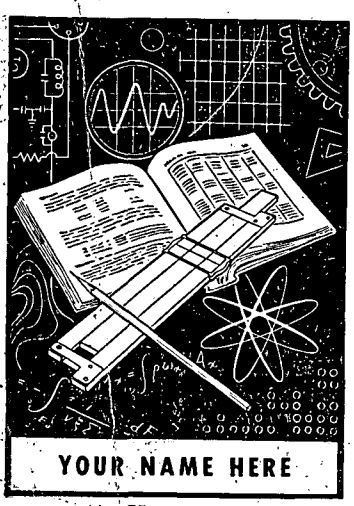

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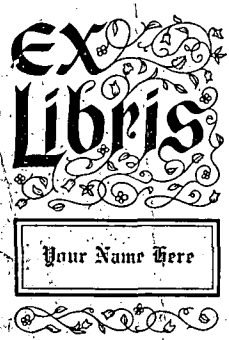

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